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Impact of paperless trading on organizations

Study of impact and future of European paperless international trading

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Impact of paperless trading on organizations: Study of impact and future of European paperless international trading platform

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ABSTRACT (MAX. 200 WORDS):

Innovation in technology within recent years pushed organizations to innovate and digitalize in order to keep their current position on the market as well as fulfil requirements for their future growth. Our study focuses on the changes that the hybrid-paperless model brought to organizations operating within international trade and the future expectations for this industry. The study is focused on one specific European digital platform that allows organizations to work and exchange documents with different parties. The study researches five large organizations in order to identify the impact caused by this platform. Additionally, this research interviews three members of the digital platform creator's team. We found that organizations using the solution cannot feel a high impact on their financial resources yet but can feel a major impact on their human resources and workflow improvements. Organizations could identify the impact on human resources and workflow even though they are not fully integrated yet. Two of the organizations could even identify the small improvement of customer satisfaction which was not yet mentioned by the available literature. Finally, organizations and creators think that most developed markets can become fully paperless within the next 10 years.

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1 Introduction

The first chapter presents the background of the document exchange process within international trade and its history. Furthermore, continues with the description of the problem area purpose of our study with the research question. Finally, the structure of the study and delimitations are presented

1.1 Background

As technological innovations arrive and become available for the industries, business strategy teams work hard to integrate new solutions within their business processes in order to achieve better results. There is no doubt that these innovative solutions help to achieve more efficient and cost-effective procedures (Civelek, Çemberci, Uca, Celebi, & Özalp, 2017) but, sometimes could also affect organizations' workflow causing diverse issues such as staff redundancy or role alterations.

According to digitalization model from Westerman, Bonnet, and McAfee (2014), international trade field can be considered as conservatives or even beginners, who have some digital vision, however, is underdeveloped and has an immature digital culture. As mentioned by Civelek et al. (2017) it is required to push international trade organizations more into digital solutions, because the paper-based solution will soon be abandoned. Digitalization of products or services bring people and things together, open opportunities for innovation, investments and new jobs (Devereux & Vella, 2018).

The paperless approach within the international trade field is according to Laryea (2005) known for more than 30 years, and later gained a lot of attention mainly as a consequence of the Korean solution. This initiative started in 2003 providing a digital solution for the industry which produced relevant results for this research (Civelek et al., 2017). Authors De Wulf and Sokol (2005) point out that a number of countries are already in a process of customs reforms and modernization of practices. According to the case study UNNExT (2010), Korea's national paperless trade platform, called uTradeHub, managed to fulfill requirements for a paperless trading platform. Results of such a system were a mainly noticeable decrease in transaction costs and an increase in productivity. According to Civelek et al. (2017) other empirical researches found, that the number of organizations using such e-Trade solution is not growing in a later stage, thus overall expected results are not fulfilled.

Differences in world markets are considerable, and therefore research of European market is important. For this reason, it is interesting to provide the scientific body with the current state of paperless international trade. Our research is focused on the European digital platform, that allows organizations to do paperless trading and currently cooperates with more than 2000 organizations (including chambers of commerce) and successfully expands across Europe.

The false dichotomy of paperless is based on the fact that the term paperless can be applied to two different models (Djassemi & Sena, 2006). Those models are "fully paperless" and "hybrid paperless". Hybrid-paperless solutions bring a lot of advantages over paper-based, but not as many as fully paperless solutions (Djassemi & Sena, 2006).

1.2 Problem area

A gap in the literature was found on the practical side of hybrid-paperless solutions for international trade. Previous studies (Civelek et al., 2017; Djassemi & Sena, 2006; Heck & Ribbers, 1999; Laryea, 2005) do not identify the impact of such implementation within the European market or field of international trade.

According to (Civelek et al., 2017; UNNEXT, 2010), the Korean government already developed an e-Trade solution in 2003, however, received a controversial response in a later stage.

Based on world market differences, we see the need to better explore and identify the impact of a European digital solution that provides digitalization of various documents required for export of goods to international markets in connection to hybrid-paperless model and its future transition to fully paperless.

1.3 Purpose and research question

Although there are already several types of research available about hybrid-paperless and paperless models, none of them is really applied to an European solution that would present a considerable result of the impact within international trade (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2005) nor its future.

Thus, this research aims to identify the impact of digitalization on organizations who actively use this solution for their international trading. Then, we can have a thorough understanding of how the future of world digitalization might look and what it might bring not only to business owners but possibly consumers as well. By understanding the future, we want to study the difficulty of transferring hybrid-paperless into the fully paperless solution and reasoning behind unavailability of such approach right now. Additionally, we aim to estimate the time this transition to fully paperless would take.

The purpose of our study is to point out results based on a literature review compared with the experience gathered from investigating organizations (platform users) and creators (service provider). This includes a dedicated study about the hybrid-paperless web-based solution for digitization of export certificates (platform).

The research provides new insight into the problematics caused by an already developed digital solution, that is in sync with recommendations from various articles on how such solution should work in terms of standardization, communication, and security (Civelek et al., 2017).

Research question: What are the organizational changes and future that paperless technology creates within international trade?

1. What are the currently identified impacts of paperless document exchange in the international trade field?
2. What is the future of paperless document exchange within the international trade field?

1.4 Delimitation

The study is mainly focused on exploring the impact of a hybrid-paperless solution on different organizations as well as its present state and future possibilities. This study does not identify the hybrid-paperless solution with fully paperless, because fully paperless solutions are currently not available or used. The study instead focuses on the false dichotomy of paperless and explains this phenomenon in detail also in connection to the future adoption of the full paperless solution. The study is fully anonymous and therefore we are not specifying any market nor any detailed description of interviewed organizations. The study is realized in only one market with a focus on one digital solution that applies the hybrid-paperless model in Europe. Organizations involved in the study are working within the international trade industry, have more than 250 employees (large organizations), do their trades globally and use a previously specified paperless digital solution with a hybrid-paperless model.

1.5 Definitions

Impact

As the term “impact” does not represent a specific measurement tool or methodology, a detailed description must be given in order to obtain a specific research question and thus to obtain accurate results in accordance to the question.

We refer to ‘impact’ as the current state and future evolution of organizations within international trade caused by digitalization. Areas which are impacting the organizations will be defined in the literature review and their validity will be then confirmed by the interviews.

Future

Our research defines the future as a view of upcoming events and is mainly focused on evolvement of full paperless adoption. The timespan of the future for our study is set to 10 years. Thus, when asking respondents or referring to the future, it is meant as what will happen within the upcoming 10 years.

2 Literature review

Following part focuses on our acquired knowledge that presents the core of our thesis. The review starts with a short history of the international trade; description of different roles involved in the international trade and continues with explanation digitalization within international trade as well as terms such as paperless and hybrid-paperless. Finally, the literature review ends with a theoretical framework.

2.1 International trade

International trade has been popular for centuries across civilizations which perform trading operations with other parts of the world. The need for trading has always existed due to variations in the availability of resources and comparative advantage (Juneja, 2019). There have always been connections between military conflicts and changes in the international trading policies (Krpec & Hodulak, 2019) which determine laws and regulations for trading operations between countries.

Historically, international trade began as soon as barter was replaced by Mercantilism in the 16th century (Juneja, 2019). With Mercantilism, nations included an economic policy whose objective was to accumulate money reserves by applying tariffs to the merchants when trading goods between foreign countries. Such policies led to war and conflict between countries and motivated colonial expansion. International trade has been influenced by two opposite positions along with its history: the first one prays for a free economy with tariff-free trading mainly influenced by liberal movement and the second one strives to regulate and control trading operations by applying fees and tariffs. The liberalization process was reversed after 1879 where tariffs were set in place by various countries (IMF, 1997).

International trade policies have been reviewed regularly over time since the end of the 19th century influencing all countries (Juneja, 2019). Businesses and organizations operate under the guides provided by international organizations and trade agreements and today, global markets are guided by the theories developed by economists based on Economies of Scale for large production and informatics tools. Nowadays, no country can be self-sufficient without trading goods with other countries and technological innovations in all fields keep narrowing down the borders to globalization.

2.2 Roles of international trade

International trade involves multiple roles such as customs, consignees, consignors or endorsers that are in certain cases interconnected and rely on each other within specific operations. Having a non-digital connection between different parties makes it hard not only for the communication but also for the processes (Civelek et al., 2017).

Types of Involvement	Parties
Purchasing & Supplying	Exporter
	Importer
	Manufacturer
	Shipper
	Consignee
	Commission Agent Export Agent
Regulation	Chamber of Commerce
	Consular Customs
	Inspection company
Financial Activities	Bank
	Insurer
Carriage	Carrier
	Freight forwarder

Figure 2.1 International involving parties (M. Civelek et al., 2017)

According to Laryea (2005) parties such as buyer or seller need to be notified about certain states within the delivery. Paper-based workflow makes it hard for different parties to notify each other, because of the authenticity or notification delivery time. Civelek et al. (2017) believes that it is a single window platform, that can group all of the parties at one place and accommodate them with required functionality.

2.3 Workflow and processes related to document exchange

Authors Ha and Lim (2014) explain that international trade has three types of flow: 1) Goods, 2) Information, 3) Finance. All these types are related to the exchange of goods for some amount of finance, that buyer is required to pay to the seller. All operations involve a lot of paperwork that is required in order to keep the authenticity and reliability of payment as well as delivery.

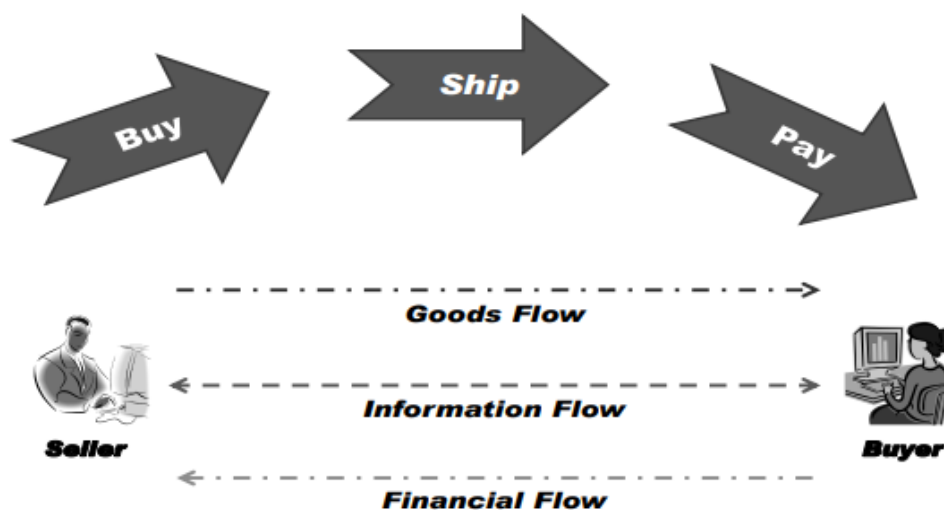


Figure 2.2 International trade workflow (Ha and Lim, 2014)

Civelek, Uca, and Çemberci (2015) argue that it is required for international trade to move into digital payments, to improve speed, agility and lower paperwork needed for each transaction. On the other hand, Laryea (2005), argues, that not all of the organizations can do paperless trading, because of possible incompatibility with government departments, that still use paper-based systems. Because of mentioned issues, according to Djassemi and Sena (2006), it is necessary to use hybrid-paperless model, in order to improve workflows but still keep standards with parties, who are unable to adopt paperless processes.

Among all of the processes mentioned above, Laryea (2005) explains, that authentication of documents is another point, that must be matched in order to fulfil the quality and transparency of trade. However, with digital solutions, workflows can be extended and improve the authenticity and transparency of trade even more, for example with temperature sensors or notifications, whereas proposed by Laryea (2005), different parties can get real-time notifications with proof of delivery. Therefore, the digitalization of international trade can be also seen as a major improvement in authenticity and transparency.

The digital solution can also help organizations and customs with the delivery of all the paperwork. Which lowers costs and improves the speed of goods confirmation as well as transportation to the buyer (Anderson & Van Wincoop, 2004; Brynjolfsson, Hui, & Liu, 2018). The price of the transport and possible losses are minimized and required workflow better optimized and standardized.

2.4 Opportunities for paperless document exchange

Digital technology continues to improve our everyday work, makes it faster, easier and more enjoyable. As mentioned by Djassemi and Sena (2006), organizations that are trying to digitize their paper-based processes are not focusing on the actual removal of paper, but instead on the improvement of their processes that are supposed to bring a bigger efficiency as well as possibility of future improvements.

Even though digitalization now appears in many different industries, according to Civelek et al. (2017), paper-based processes still persist in foreign trade transactions, mainly because of their complicated business processes which involve many countries and different rules for each of them. In consequence, this digital solution for foreign trading can be considered a major improvement of business processes and might further contribute to the improvement of financial saving, human resources and future opportunities (Devereux & Vella, 2018).

Digitalization must follow specific standards in order to achieve its applicability and agility (Civelek et al., 2017). As explained by Legner et al. (2017) digitalization of processes and economy create ample opportunities for continuous experimentation with new digital business models and services. The move towards digitized business requires organizations to undertake socio-technical transformations that affect organizational structures, strategies, IT architectures, methods, and business models (Legner et al., 2017).

2.5 Barriers of paperless document exchange

Paperless trade is not only about removing papers from processes but also about optimization of those processes and adoption by all different parties that might gain the advantage of such approach (Civelek et al., 2017). According to Laryea (2005), barriers of paperless trade can be split into two categories, legal and operational. Civelek et al. (2017), created a framework which is some sort of a checklist that should define requirements for a digital paperless platform solution.

Both authors point out standardization of documents as one of the most common barriers as well as the most important requirement for a well functional paperless trade platform. Authors in Civelek et al. (2017) argue, that standardization is not related only to a technical part, but also to psychological or management issues. Cannon (1994) believes, that doing solution of the size that no one did before, small experience or need of better understanding of the project, might lead to project failure

Other issues that might be connected to the digitalization of paperless trade are different requirements and procedures in countries, incompatibility of systems, security or legislation (Civelek et al., 2017; Laryea, 2005). Authors Civelek et al. (2015) see also a problem in large investments for start of such project when compared to volume and profitability of foreign trade transactions as well as further limitations of international coordination or current high reliance on paper.

Language is a barrier that makes international trading operations difficult between different countries (Brynjolfsson et al., 2018). Studies on this matter encountered a positive correlation between bilateral trade and reduced language barriers (Anderson & Van Wincoop, 2004). Besides, countries that share the same spoken language may also share similar trading practices and relationships so their processes involved in international trade may have similar characteristics. On top of that, as part of a study performed by Brynjolfsson et al. (2018), machine translation applications on trading platforms can increase the export of goods by 17%. These facts confirm language as a significant barrier to consider the transition to paperless.

2.6 The false dichotomy of paperless

The following section will elaborate on different methods of how to organize and manipulate different organizations' documents. According to Djassemi and Sena (2006), paperless can be considered to contain a false dichotomy, because, paperless is based on two different approaches/models. First one is a hybrid-paperless that digitalizes a number of processes, however final processing of documents still requires paper document (Djassemi & Sena, 2006). The second one is a fully paperless solution, which is not dependent on the paper by any means, and thus can be considered a fully digital solution. Each of the models has its advantages and disadvantages and it is just up to the organization's digital capabilities, adoption ability and legislation that leads to the use of a specific model.

2.6.1 Paper-based

Term “paper-based” is a mostly self-explanatory term that defines a process that is fully dependent on a paper. Thus, organizations that are paper-based, fully rely on the paper document and are required to manipulate, sign or copy them manually, which involves a lot of human resources. As mentioned by Djassemi and Sena (2006), the paper-based solution in this digital era can be considered a bottleneck, therefore it is essential to consider more digital solutions, which can be either hybrid-paperless or fully paperless solution. The focus of organizations is not to remove the paper from their entire processes, but instead, improve benefits and productivity for customers (Djassemi & Sena, 2006). Following figure 1 explains the processes that are handled by different parties within international trade. According to figure (Figure 1), it is clearly visible, that there are many steps where human factor plays its role, such as approval, sending and verification or even creation of the document.

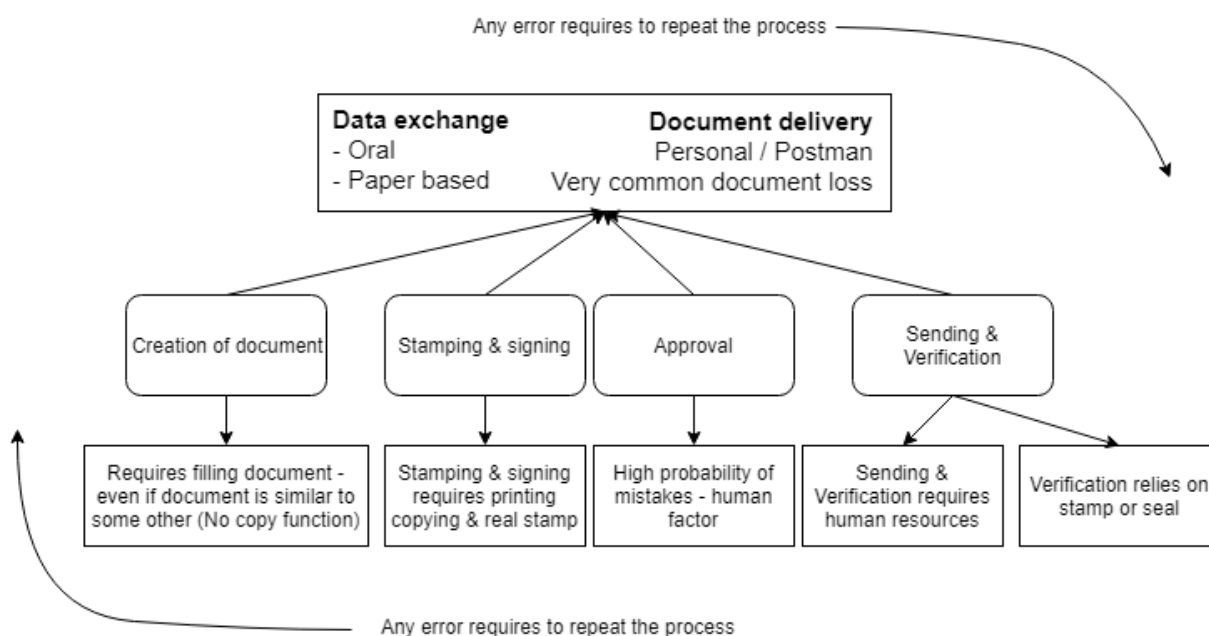


Figure 2.3 Paper-based process – inspired by M. Civelek et al. (2017)

The paper-based workflow requires lots of attention from employees in order to hold the quality and accuracy of work. Repetitive work is not that engaging and might be less motivational than non-repetitive. According to Chen and Pan (2016), repetitive work might be tightly connected to human errors, that might lead to a repetition of the whole workflow with all the parties involved.

2.6.2 Hybrid-Paperless

The process of paper-based document exchange takes not only a lot of human resources but also time and increases the possibility of document invalidity (Civelek et al., 2017). Adoption of a fully paperless solution brings a number of problems (Laryea, 2002), thus organizations started to do half-digital solutions which are called hybrid-paperless (Djassemi & Sena, 2006).

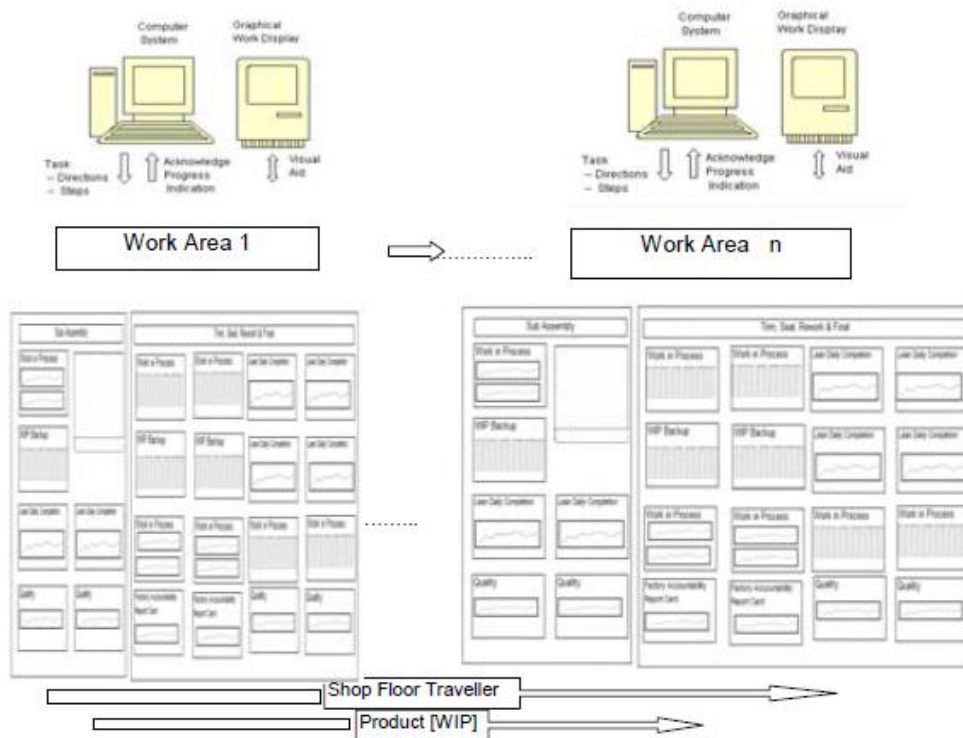


Figure 2.4 Hybrid-paperless system configuration (Djassemi & Sena, 2006)

The hybrid-paperless model can be considered a more digital version of the paper-based model, but without full removal of paper in the process (Djassemi & Sena, 2006). In this case, hybrid-paperless offers the possibility for organizations (consignees, consignors, endorsers, banks or insurance companies) to operate with a document in a fully digital way (fill, sign, stamp, etc.), where at the end of the whole process, paper documents are still used and some processes still rely on. Thus, as explained by Djassemi and Sena (2006), hybrid-paperless can be considered as a transitional approach to a truly paperless solution (Figure 2.4).

2.6.3 Paperless

It is not only international trade that is moving towards paperless (Civelek et al., 2015) but also for warehouses, schools or healthcare. Author Carpenter (2013) points out, that also healthcare documentation needs to move towards paperless solutions, because of transparency and increasing IT and digital use.

According to Laryea (2002), paperless improves not only efficiency but also economic analysis, planning or port clearance. Authors Ugale, Patil, and Musande (2017) argue, that paperless office is an important project within any organization which improves environmental practices as well as sustainable development.

The paperless solution is, therefore, some sort of final solution that many organizations want to achieve and can be considered as a final solution in which papers will get abandoned

(Civelek et al., 2015). According to Thiru, Lusignan, and Shaw (2002), there is no clear definition of what paperless really means, thus description can vary within different computerized processes. Based on multiple articles (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2002) we can agree, that paperless solution is a solution, which can remove paper within various processes by transferring those processes towards fully digital solution (such as web page or application) and thus greatly improve quality, speed and validity of offered service.

Transition to paperless is considered to have various barriers (Laryea, 2005), but according to Civelek et al. (2015), the way to abandon the use of paper is by largely expanded use of electronic documents in banking.

2.7 Digital platform or Single window trade portal

The present is a digital platform era, where most valuable companies of the world are actually digital platforms and process millions of interactions on a daily basis (Chang, Li, & Sun, 2019). Thus, the digital platform can be described as a modular structure, which promotes co-creation, resource distribution and is based on positive network effects (Chang et al., 2019).

According to Civelek et al. (2017), there were already several platforms or single window portals where local trade community and regulatory agencies were grouped. However, such a solution cannot be considered as final, because it is required to gather all parties in order to gain all of the advantages of paperless trade (Civelek et al., 2017).

Governments that are not willing to facilitate Electronic Data Interchange (EDI) systems for their importers and exporters might slow down the economic development of the country (Bellego, 1991). This fact implies some evidence of change towards paperless trade that started decades ago and brings interest to investigate its current state. As discussed earlier by Civelek et al. (2017), evidence reveals that paper-based processes remain within international trade industry and they are experiencing a hard time to be replaced by digital platforms.

2.8 Theoretical framework

Impact of digital document exchange (EDI) was already discussed in research by Heck and Ribbers (1999) who developed a conceptual model (Figure 2.5) that represents main points that affect EDI adoption as well as integration and thereafter constitute a way to measure the impact of EDI across specific industries.

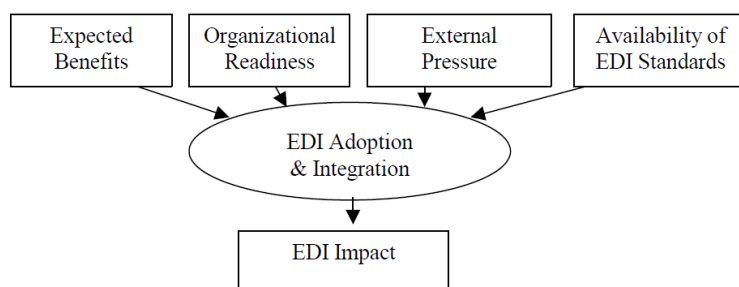


Figure 2.5 Conceptual framework (Heck and Ribbers, 1999)

Our research focuses on electronic data exchange systems applied to the international trade industry only as this sector is especially struggling to adopt innovative digital exchange systems and paper-based systems still prevail (Civelek et al., 2017). This study focuses on the hybrid-paperless model, which can combine various protocols or standards for document exchange.

Therefore, based on the literature review and extended framework presented by Heck and Ribbers (1999) we have developed our own research framework (Figure 2.6). The diagram shows different stages of the industry (paper-based, hybrid-paperless and paperless) as discussed by Djassemi and Sena (2006) where the transition between each stage uncovers opportunities and difficulties (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2002). The interpretation of the initial framework suggests several factors that were utilized by Heck and Ribbers (1999) to obtain a detailed insight into EDI's adoption and Integration. These factors define the impact caused by EDI; therefore they are taken into consideration for the development of our own theoretical framework.

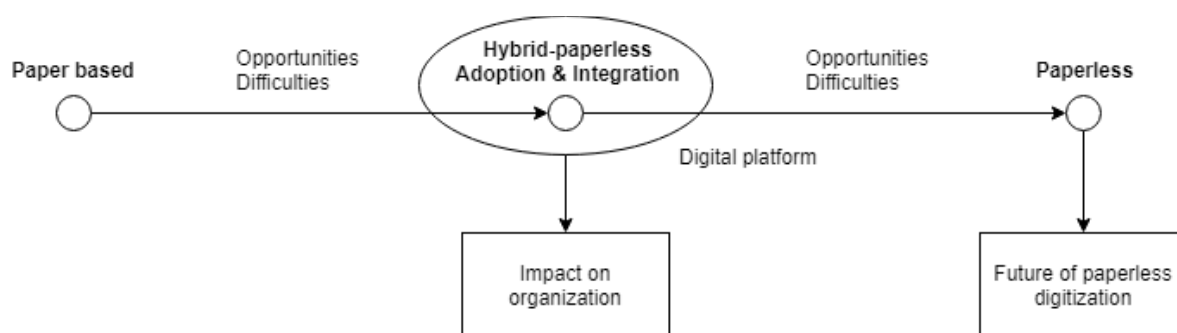


Figure 2.6 Theoretical framework

Fully paperless solutions are currently quite limited in its application, therefore a number of industries are using hybrid-paperless instead, where a fully paperless approach can be seen as a future (Djassemi & Sena, 2006). By living in the digital era (Chang et al., 2019), it is considered as a requirement to make it possible to access all of the hybrid-paperless features via digital platform or web-based solution which can lead to the easier implementation of new features (Djassemi & Sena, 2006).

2.8.1 Impact

A detailed description must be given to the term 'impact' in order to define the research question for this study accurately. As this term does not relate to an empirical or objective meaning, a definition of this term according to this study is required in order to obtain accurate and specific results.

Heck and Ribbers (1999) defined impact referring to the actual benefits that the adopters receive from adopting an EDI solution and assumes that the level of integration and adoption are positively related to the benefits this technology can bring to their businesses.

This research applies the same definition as proposed by Heck and Ribbers (1999), referring to the benefits that a business or organization can obtain by adopting hybrid-paperless solutions. Our definition of impact is also determined by the adoption and integration of hybrid-paperless solutions, however, takes into consideration different factors to determine and measure impact. These factors maintain correspondence with Heck and Ribbers (1999) but have been adapted, as the objective of our research is to explore the current impact that hybrid-paperless has already made in the industry. It would also be possible to compare our identified impact provided by a European solution with the one presented in Asia.

2.8.2 Adoption and integration

Equivalently to Heck and Ribbers (1999) definition, adoption of hybrid-paperless is the process during which the small business becomes capable of performing trading operations with a hybrid-paperless solution. In our case, this solution is the platform creator subject of our study.

The integration of the digital solution involves changes during which the firm modifies and adapts its business practices and applications to the new technology (Parviainen, Tihinen, Kääriäinen, & Teppola, 2017). This phase happens both internally (ERP applications) and externally with other trading partners (suppliers, customers, governmental organizations, and financial institutions). By adoption of hybrid-paperless or paperless, organizations gain various advantages and opportunities such as cost savings, better efficiency, fraud prevention and many others (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2002; UNNExT, 2010). The transition from paper-based processes to paperless brings not only opportunities but also difficulties (Civelek et al., 2017; Laryea, 2002).

3 Methodology

The following section will discuss the methodology used in our research as well as the research process. Sections provide also a detailed overview of the choice of methods, limitations, and arguments that lead to these decisions.

3.1 Research strategy

The aim of our research is focused on gathering proper and verified information that can answer the questions of digitalization within international trade in connection to different models of paperless document exchange.

While considering different research methods, we were looking for a method that will combine the already available knowledge with the one that can be gathered from different organizations. We have decided to choose a qualitative research method, that should allow us to deliver both, good quality of arguments as well as high-quality results which can easily form an overview of researched problematics. The reason for choosing qualitative method instead of for example quantitative method is, that some identified impacts cannot be measured, and therefore could not be identified by previous quantitative researches. Explanation of how different organizations and creators see future of paperless international trade was also needed for our study and by using the quantitative research we might get limited because we would not be able to question and challenge organizations to get the answers.

We have started with the research of available literature and created literature framework that led us towards the empirical findings. Framework (figure 2.6) is based on several publications and can be considered as a leading point of our research for further development or analysing.

Generally, the qualitative method is focused more on words, rather than numbers (Recker, 2013). Which means that we should be able to develop a thorough picture of the phenomena and focus not only on the available literature but also knowledge available within experienced organizations. We think that our research question is in line with exploratory research described by Bhattacharjee (2012) since we are researching the impact of a specific phenomenon on the organizations and research area is considerably unexplored on the European market.

3.2 Data collection

Open coding method has been applied prior data collection according to Strauss and Corbin (1998) description. This coding technique is named “open” as the researcher is allowed to actively search for new concepts and ideas that are relevant to the subject of study (Bhattacharjee, 2012). In the open coding process, the key ideas and concepts that are potentially related to the phenomenon of interest are identified within the text. Concepts are identified prior data analysis and these will be used to code and classify the extracted data accordingly. Then, each concept is linked to a specific section of the text, for later validation, these

sections are called ‘coding unit’. Simultaneously, the authors actively look for new concepts as the analysis is carried out (Bhattacharjee, 2012).

In this research, the main source of data is extracted from the transcripts of the interviews and classified according to our coding scheme to constitute the primary data of the study. Additionally, the second source of data is utilized to strengthen ideas and establish ground concepts. This secondary data is obtained from the literature review stage and is utilized to produce the theoretical framework and to define the results.

3.2.1 Interviews

In order to give freedom and gain active conversation with respondents (Bhattacharjee, 2012), we have decided to use semi-structured interviews as our main data collection method. By semi-structured, we were able to ask further questions and by that better understand the answers and experience of respondents (Creswell, Hanson, Clark Plano, & Morales, 2007).

Even though this study is anonymous, each interview started with a simple introduction of the respondents, where respondents had to answer questions such as the current position or number of employees. Size of the organization (based on employees’ amount) should help us understand the extent of results or problems that an organization might experience while adopting paperless processes in the future.

Our study is based on interviewing two sides. The users of the digital platform (organizations) as well as the creators of this platform. By doing so we gained a possibility to create a better picture of problematics connected to the digitalization of international trade as well as to such an international platform.

According to Kvale and Brinkmann (2009), the audio recording makes it easier for the interviewer to fully concentrate on the respondent as well as topic and thus, improve the quality and dynamics of the conversation, which might bring better and more focused answers. Therefore, we have decided to record each of the interviews on two mobile devices and later transcribe the conversations.

As mentioned earlier, we have decided to create opened questions, to have a better discussion with the respondent about a specific topic. Questions were created based on the most common impacts that can be identified by various authors (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2002) and extended in order to gain a better overview of current experience. Questions related to the future were aiming to gain a better understanding of how organizations plan to invest their saved financial resources (thanks to digitalization) and also how they see the future of such solutions. Following table presents the focus of each question with a short description (Table 3.1).

Question	Purpose / Description
What is your profession within the organization	Introduction - Introduce respondent and gain a better overview of the respondent's knowledge
How many employees does your organization have	Introduction – Introduce organization size
Why have you decided to adopt a digital platform for paperless document exchange?	Obtain a picture of reasons and key decisions connected to the adoption of paperless and expected results
How hard was a process of transition between paper-based and paperless structure? (Elaborate on experienced problems)	To get a picture about problems and barriers which were encountered
What were the expected results of having a digital solution for document exchange?	Get a better understanding of what organizations expect from the solution
What is the impact of this digitalization on financial resources?	Discussion about financial aspects that can be positive but also the negative (installation, expected return, etc.)
What is the impact of this digitalization on human resources?	Digitalization can be scary for employees, so how did the organization manage human resources with digitalization?
How much time do you spend on one document in comparison to the old way?	Get a better overview of time spent on one document.
Do you use paper (after digitalization) in any of your current processes – i.e. sticky notes?	Is the paperless process totally paperless?
Does the solution bring all the expected results already?	Are there already any visible results of using paperless?
Where do you plan to invest saved resources? (new products, new services ...)	Gain an overview of how the organization would use extra resources (financial or human) -
How do you see the future of this digital platform and your organization?	Understand future expectations of organizations on paperless

Table 3.1 Interview questions for organizations using the digital platform

As mentioned earlier, our research is trying to get an insight not only from the perspective of organizations that use the paperless digital platform but also from the perspective of platform creators who were responsible for standardization and functionality. We made an interview with creators mainly because we were interested in issues they experienced while creating such a platform as well as their vision about the future of paperless. As a result, we have created a specific interview question for them (Table 3.2).

Question	Purpose / Description
What is your profession within the organization?	Introduction - Introduce respondent and gain a better overview of the respondent's knowledge
Can you describe the functionality of the digital platform?	Introduction – Introduce platform
Why did you choose a hybrid-paperless model?	Obtain a picture of reasons and key decisions for adopting hybrid-paperless model instead of paperless
How many organizations are using the solution?	To get a picture of how big the overall project is
How did you overcome the different barriers and what was the most common one?	To get an understanding of how big problem the standardization was and how it was overcome
What needs to be fulfilled in order to transfer your solution to fully paperless?	Discussion on the transfer of solution from hybrid-paperless to a paperless model
What are the advantages that organizations might gain by using your solution?	Understand reasons and problems that digital platform seeks to improve
How do you see the future of this digital platform and your organization?	Understand future expectations

Table 3.2 Interview questions for the creator of a digital platform

In order to let respondents (organizations as well as creators), elaborate at the end of the interview, we have created two extra questions (Table 3.2). Those questions should also help respondents to add some missed point which might be essential for final discussion and also change the content of an answer.

Question	Purpose / Description
Is there anything extra you would like to add?	Finalize and possibly improve previous answers or extend the final discussion
Would you like to change anything in your previous answers?	Possibility for the final discussion in case of any changes and improvement of accuracy of answers

Table 3.3 Interview final questions

3.2.2 Researched digital platform

A digital platform that is used in our study, is on the market for more than 4 years and by that time gathered over 2000 organizations that are actively using it. The platform is integrated to all leading shipping agents and carriers and uses various protocols such as EDI or XML for

direct transfer of bookings. The platform connects nearly all parties such as endorsers, forwarder, consignees, and consignors, however, does not include banks or insurance organizations yet.

The platform is available as a web solution, that lets a user with any operating system to connect and work with the offered functionality. Digital platform also offers integration to various systems and lets also organizations to connect their systems for management of goods such as SAP or several others.

3.2.3 Respondents selection

The aim of our interviews was focused on organizations, who actively work with the digital platform within international trade and managers or employees who were actively involved in its adoption and usage. When looking for organizations to interview, we have asked creators of a digital platform for a list of organizations they cooperate with and then we have created an invitation with the short specification of the offered interview (Appendix 1). After the invitation paper was done, we have sent it to various organizations which we chose as a valid in terms of size and adoption stage and wait for the reply. We had interest also in interviewing the creators of the platform. Reason for having an interview with creators is, that creators might have a different experience with digitalization as such because they were the ones who created a final solution for organizations. Therefore, we have decided to make an interview with the sales director, solution architect and CEO/Co-founder of the digital platform in order to get better insights into the solution, the problems, and future opportunities.

In order to keep full anonymity of the organizations, we cannot describe the respondents in detail. Therefore, we have decided to create a table 3.4 which displays respondents' position, type, duration and date of the interview and also separate section 3.2.4 which uncovers at least some details about organizations of our respondents.

Respondent	Position	Duration	Date	Type
R1	Supply chain supervisor for special tasks and projects	25 min	30 th April	Phone
R2	Head of global customs operation	25 min	3 rd May	Phone
R3	Certificate service manager	20 min	22 nd May	Phone
R4	Carnet Manager	-	25 th May	E-mail
R5	Office manager	30 min	25 th May	Phone
C1	Sales director	30 min	2 nd May	Face-to-face
C2	Solution architect	35 min	21 st May	Face-to-face
C3	CEO & Co-Founder	-	22 nd May	E-mail

Table 3.4 Overview of the interviews

3.2.4 *Researched organizations*

In order to strengthen the credibility of our study, we present the researched organizations with brief info, which should give a better overview to the reader.

Organization 1 – Respondent R1: Large American organization, whose yearly revenue is over 50 billion euro. The organization is focused on various fields including chemicals and chemical materials. The organization has more than 15 000 employees and is based in more than 90 countries in a world.

Organization 2 – Respondent R2: International organization which is one of the largest producers of dairy products in Scandinavia. Revenue of this organization is yearly over 8 billion euro and has more than 19 000 employees.

Organization 3 – Respondent R3: Chamber of commerce based in one European country, which covers over 10 000 private enterprises in industries such as manufacturing or service. The member companies employ over 1.2 million employees in total.

Organization 4 – Respondent R4: Chamber of commerce based in one European country, which acts as a network for the service industry in a specific European country. The organization has 250 employees and covers thousands of private enterprises in various industries.

Organization 5 – Respondent R5: Private sector organization, working with cold stores, who have around 6 warehouses and ice factories in Scandinavia and more than 250 employees in total.

3.2.5 *Interviewing*

As can be seen in the table (Table 3.4), our interviews were mainly face-to-face, and phone-oriented with an average duration of 30 minutes. Reason for having phone and email interviews was a limited time that respondents had for us. In case of an interview with creators, we have had mostly a face-to-face interview, which was done in the office of the platform creators.

Before each of the interviews, we have ensured that the respondent is in a quiet environment, where disturbance is limited, and the respondent could fully focus on the interview. Right before interviewing we have asked respondents for permission to record and acknowledged them how we will later use the recording. After we got permission to continue, we have started with an introduction together with an acknowledgment of rules for an anonymous interview.

When the interview was at its end, we have had two extra questions for our respondents which were asking if they want to add anything more or change any of their previous answers.

3.3 Data analysis

The chosen technique to analyze the data is coding. According to Recker (2013), this is one of the most popular techniques to transform qualitative data into meaningful information. Coding consists of assigning tags or labels as units of meaning to sections of data collected (words, phrases, paragraphs, or entire documents) as mentioned in the previous section (3.2 Data collection). This way we can categorize or classify information around the concepts and ideas that we identified in the data.

Data coding has been performed according to the following tables:

Subject: Impact of Hybrid-paperless: Coded as IHP		
Coding Unit	Keywords	Code
Impact on Financial Resources	Financial, Savings, Capital, Budget, Money, Price	FCL, SVNS, CAP, BDGT, MNY, PR
Impact on Human Resources	Labour, Resources, Human, Employers, Workers	LBR, RSCS, HMN, EPYS, WKS
Impact on Business Efficiency	Efficiency, Effective, Time Saving, Improve, Performance	EFCY, ECVE, TM, SVNS, IMPR, PER
Impact on the Future of the Organization	Organization Future, Investments	OFTR, INV
Impact on Customer Satisfaction	Customer, Satisfaction, Happy	CMR, STFVN, HPY

Table 3.5 Coding scheme for the impact of hybrid-paperless

Subject: Future of paperless. Coded as FP		
Coding Unit	Keywords	Code
Process digitalization	Digitalization, Development, Upgrade, Process, Future, Digital	DIG, DEV, UPD, PRCS, FUT, DIGTL
Integration speed	Integration, Implementation, Speed, Years	INT, IMP, SPD, YRS
Advantages	Advantage, Benefit, Saving, Cut Down, Opportunities	ADV, BEN, SVNS, CDWN, OPP
Automation	Automation, Automatic, Routine	AUT, PRO, ROU

Agreements	Agreement, Certificate, Legal, License, Standard	AGR, CER, LEG, LIC, STA
Adoption	Implement, Adopt, Acquire, New, System,	IMNT, ADPT, ACQ, NEW, SYS

Table 3.6 Coding scheme for future of paperless

Each subject has been analyzed individually one at a time in order to extract relevant information without mixing up the content. Then, all the codes are extracted and listed accordingly for later classification and validation process.

According to Kvale and Brinkmann (2009), it is recommended to do coding of the interviews in a way, where each of the authors does coding on his own and after that results are compared, in order to allow higher accuracy. We have analysed the interviews right after they were finished so that we could analyse them while keeping the original interview in mind. This procedure eased up the whole process and prevented us from having too many interviews to analyse at once.

Analysis of each organization was created upon gathered data in order to help us obtain a better understanding of the interview as well as an overview for each of them. Even though this research is qualitative, gathered data obtained from interviews and literature were converted to the same units. This process enables easy data to compare and helps us to better understand the received data.

Interviews were recorded on two different devices to minimize possible problems and prevent possible loss of data. When transcribing interviews, we have removed any names of organizations and converted reported values to a Euro, to better support the anonymity of our respondents.

3.3.1 Words analysis

We have analyzed also words and sentences that we have gathered from respondents, in order to check if we got answers which were related to our topic and to gain a better insight of what were our respondents most focused on.

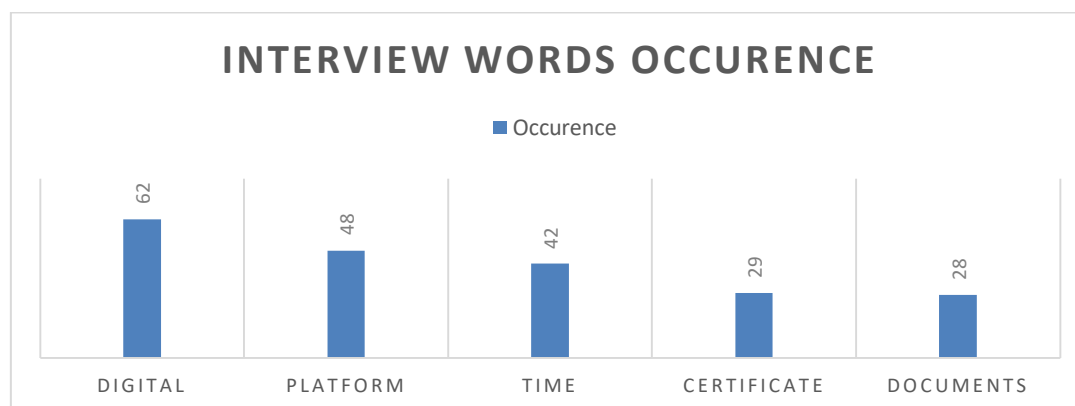


Figure 3.1 Analysis of respondent answers – words analysis

By analyzing the data, we have discovered that our respondents used the following words the most: digital, platform, time, certificate, documents. On figure 3.1, we can see a comparison of how many times those words occurred in our study. We have decided to use these words also as a keyword for our study because we believe that these words are the most related to the actual topic.

3.4 Research quality

We believe that the quality of the research questions can be evaluated according to the criteria mentioned by Recker (2013). Following these criteria, the research must be feasible, interesting to the investigator, novel, ethical, and relevant.

Regarding feasibility, the most important factor to carry out this research is to set a manageable scope considering time and budget. These points were considered when designing the research questions and methodology of our study.

Technical expertise was verified to be reachable and available during the time the research will be conducted, and the subject of study was confirmed to be adequate by supervisors.

The novel refers to the answer that the research question provides. These answers must confirm or refute previous findings or provide new findings. In this case, this study provides new findings as a literature gap was found and a new phenomenon is investigated with a different method (qualitative).

The next point states that the research must not violate ethical principles. Although this factor can be a matter of common sense for most researchers, it is always important to review ethical principles that should not be violated. These are discussed further below in the next section.

Last, the research must be relevant to the subject of study. This implies that both the research question and the findings inform and contribute to the scientific knowledge as well as they are practical for the area of study.

Quality of research and its trustworthiness is according to Kvale and Brinkmann (2009), based on reliability, validity, and generalization. Thus, in the next section, we address each of these concepts. As a final point, we present also ethical aspects related to our study.

3.4.1 Reliability

All conducted interviews were recorded on two mobile devices in order to improve the reliability and limit possible technical problems.

In order to achieve better reliability of results, we have transcribed the interviews (each of the authors separately) right after each of them was completed to assure the accuracy in transcribing. By doing so, we followed what Stiles (1993) proposed and based trustworthiness of our study on the procedures and generated data.

We have decided for separated transcription of the interviews, also because one of the authors works actively as a developer of the digital platform. Therefore, by separate transcribing, we wanted to ensure that there will be no possibility of any interference with reliability.

3.4.2 Validity

We strongly agree with Brinkmann and Kvale (2005), that we are a society of interview culture and thus, respondents feel more relaxed by being interviewed which comes with the outcome of more valid and accurate data. But according to Seale (1999), external validity in relation to qualitative research might be difficult, which is mainly related to conducted interviews.

It is hard to specify how many interviews are needed to achieve good validity of the study. Furthermore, as stated by Kvale and Brinkmann (2009) number of the interview can be related to the context of the research. Therefore, we have decided to conduct 8 interviews in total which is after our consideration just enough to get valid results for this study. The number of interviews was also limited to a certain way to our selection of specific size and working area of organizations. Interviewed organizations were large organizations with more than 250 employees and working in the international trade industry.

To improve the validity, we have decided to interview two parties, which are the organizations that use the solution and creators who are responsible for the offered services. By having interviews from both parties, we want to get a better insight into the identified impact that both parties had noticed as well as get a better understanding of the perceived future of such solution.

3.4.3 Generalization

Generalizability is according to Kvale and Brinkmann (2009) an ability to reproduce the study and get the same results. By having this in mind, we have decided to increase the number of interviews in order to achieve better generalizability of our study. Thus, our data are validated by multiple sources.

All our respondents are based in one country and using the same digital platform for paperless document exchange. Organizations chosen for this study are working within the international trade industry and employ more than 250 employees. Thus, the findings of our study are based on data from organizations who have the same political or social context.

To improve the generalizability of our study, we have created a detailed explanation of our procedures for analysis and collection of data.

Therefore, by knowing this, the future application should be cautiously considered.

3.4.4 Ethics

The qualitative study brings several ethical considerations, which are related mainly to interviewing the respondents and further analysis of data (Kvale, 2006).

While inviting organizations to the interview, we have created an invitation paper (Appendix 1) which provided respondents with an insight of study focus. We did not mention what are the actual outcomes, because that might limit the answers of the respondents (Bhattacharjee, 2012).

Before interviewing any of our respondents, we have introduced our research and its purpose to the respondent, which is according to Burns (2000) one of the fundamental ethical principles. During the introduction, we have also asked for permission to record and transcribe the interview. Thus, by doing so we have followed one of the fields of ethical uncertainty called “informed consent” proposed by Kvale and Brinkmann (2009). We have decided to address also the rest of them, and therefore confidentiality and consequences of the role of the researcher are addressed in our study as well.

Confidentiality was one of the main and most important requirements for our respondents, all of them required the study to be fully anonymous in order to get the ability to share all their knowledge freely (Burns, 2000; Kvale & Brinkmann, 2009). At the end of the interview, we gave respondents a possibility to add anything more or even change their answer for a specific question.

4 Empirical findings

The chapter presents our empirical findings that were collected through interviews. Furthermore, we will go through different aspects and problems by discussing and pointing on the actual answers from respondents. Identified impacts are later presented in de-tail within separated sections. Respondents are strictly tagged by a specific name in order to recognize different answers and results.

4.1 Hybrid paperless

During our research and literature review, we have found out that the presentation of the hybrid-paperless model, presented by Djassemi and Sena (2006) is not clear enough. To better understand how the whole process of hybrid-paperless works, we have created an overview of the hybrid-paperless process fitted into international trade field (Figure 4.1). Table 4.1, as well as figure 4.1, were created by combining responses of interviews and theories acquired in the literature review.

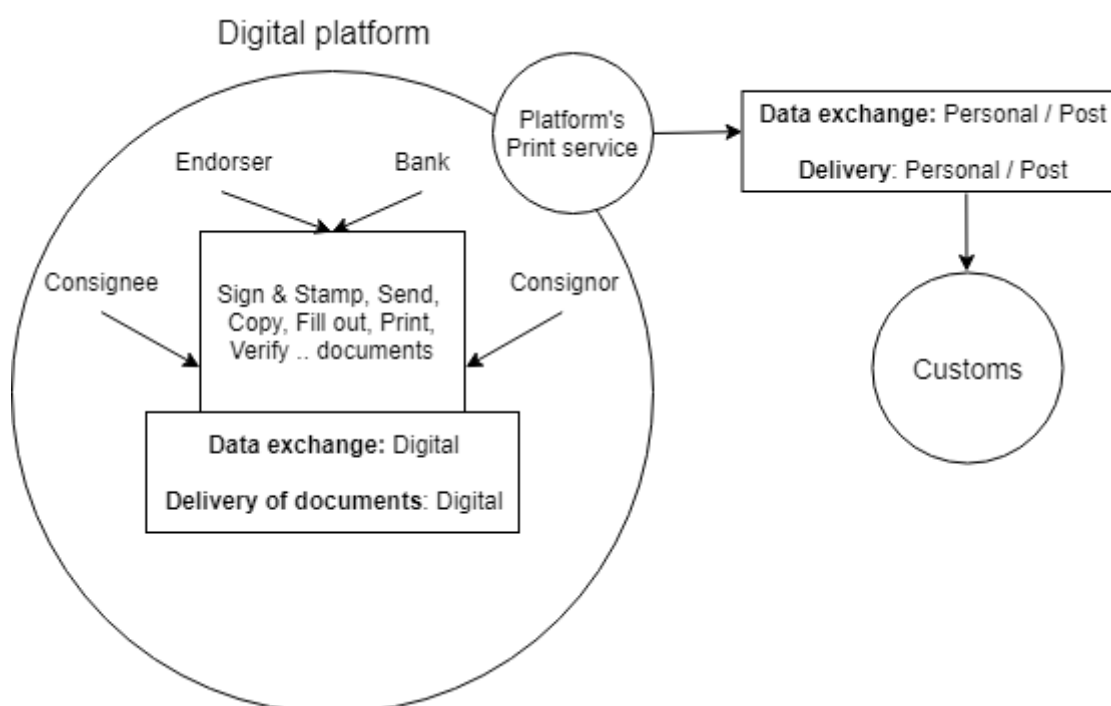


Figure 4.1 Hybrid-paperless in relation to the digital platform within international trade

According to an interview with sales director (C1: 2), the hybrid-paperless model represents an improvement of paper-based processes and interconnects different parties in a more organized and standardized digital way, which execution is seamless and quick. Hybrid paperless should not be considered as a final step instead as transitional between paper-based and paperless.

As presented on the (Figure 4.1) most parties are able to communicate in a fully digital way, however, some (i.e. customs) are still based on a paper (Djassemi & Sena, 2006). Even parties who do not have digital access, get information and documents in a more standardized and organized way, where the platform can ensure and verify the quality of documents before any further actions. Delivery of documents is also more standardized, thanks to printing service which is provided by the platform.

We have created also a table 2.2 that easily explains the advantages of hybrid-paperless over paper-based as well as its limitations of digitalization within international trade.

Process	Hybrid-paperless	Paper-based
Signing, filling, stamping	Digital	Non-digital
Notification of different parties	Digital	Non-Digital
Document exchange between parties (consignees, consignors, endorsers)	Digital	Non-Digital
Finalization of document and delivery to customs	Non-Digital	Non-Digital
Access to document and verification of authenticity	Digital & Non-Digital	Non-digital

Table 4.1 Hybrid-paperless vs. paper-based

4.2 Adoption of hybrid-paperless

The adoption of a hybrid paperless model in the industry has brought new experiences on difficulties and opportunities to organizations. These new factors have been identified by interviewing respondents and are presented below.

According to our interviews, supply chain supervisor for special tasks and projects said that they were not yet able to fully adopt the paperless solution within their organization (R1: 3). Reported problems with adoption were mainly related to bureaucracy within the organization where decision-makers are unable to decide about various processes as quickly as it would be in a smaller organization. Organization of supply chain supervisor is a large organization with more than 15 000 employees worldwide, where over 500 employees are related to the actual export of goods and 12 employees work with the actual digital platform (R1: 2). As supply chain supervisor pointed out, they are already using the digital platform for manual creation of documents, where they do not need to use various PDF documents separately but instead have the possibility to create documents in one unified platform (with other possibilities like a copy, share, etc.). Full integration reported by supply chain supervisor is more related to the integration of all their systems to the digital platform, what did not happen yet and based on

our interview it is expected that it will take three to six months more to integrate the whole organization on the platform (R1: 12). According to these results, we can see that organization of supply chain supervisor has a problem with full integration to the platform, but as he said it is not related to technical problems but rather psychological and time (R1: 3).

Even though this organization does not use the full potential of the digital platform just yet, as mentioned earlier according to supply chain supervisor, their organization already started to use digital platform for creating various documents and can already see improvements in speed of creation as well as better convenience.

“We are seeing in general that we have shorter time spent on creating certificates when we are creating certificates through a digital platform in comparison to the old way where we printed on our own paper, sent it to the food administration and so on.” (R1: 13)

Interview with head of global customs operations (R2) confirmed the improvement of workflow efficiency, a gain of financial resources as well as prevention of errors. The full adoption of paperless (meaning complete integration with all the systems) will take one more year, however, the system is being used already with certain integrations for more than 4 months (R2: 5). According to the head of global customs operations, integration of their company data seems to be harder than with any other organization (R2: 4). Head of global customs operations does not consider these issues as a mistake of the digital platform, but as their own internal issues and complexity of the data (R2: 4). Adoption of the platform already brought results which, as head of global customs operations pointed out, are quite big improvements of speed and easier correction of errors. The expected result of the adoption was to remove 2 to 3 employees from the workflow, which was already fulfilled after just a few months of use. Adoption was according to the head of global customs operations also supposed to help with better accuracy and reusability of the entered data.

“Well, two reasons or maybe three, one is speed, two is the accuracy of the documents if you can reuse our existing data, and three we are spending 30 – 35% of our time just on documents in the department and we are approximately 50 people.” (R2: 3)

Head of global customs operations reported that they spend 30-35% of their time only on documents (R2: 3). Therefore, they see the high potential of this adoption. Similar results were reported also by Certificate service manager (R3), but most expected result of adoption was to offer the best possible service for their customers.

According to the sales director of the platform (C1), the adoption of the hybrid-paperless model is rapidly growing, and companies are opened more than ever before to digitize their processes. Even though for bigger organizations, integration can take 6 to 9 months, because of bureaucracy and pilot testing, small companies can digitalize their document exchange within 24 hours. C1 points out, that new digital standards such as PEPPOL are being adopted and within 2023 there should be safe and reliable digital open standards that will connect public sector, customs, and organizations within international trade.

The reasoning for the adoption of hybrid-paperless is according to sales director, the need to comply with current standards, where a large number of customs and public sector is already using digital solutions. On the other hand, in many countries within the world, paper documents are still required.

“We have to respect that many exporting companies, are very different in their maturity of digitalization, and a lot of countries are still asking for a paper version of the document.” (C1: 5)

Not all of the documents are fully digitized and even though certificates of origin have their digital version, this is not applied to health certificates. Therefore, creators use hybrid-paperless model creating partnerships with organizations or their own printing services, whose process consists of repetitive scanning, signing (on behalf of the clients), printing, scanning and uploading those documents back to the platform. By following this process, organizations gain fully digitalized experience, because they do not need to print or work with paper, and thus have a feeling of digital document exchange.

“That is because of the reality. If we want to send something for instance to Lebanon it is difficult to expect them to become digital. So, there are some legal boundaries and when we are dealing with international trade all over the world, the paper is still a rule.” (C2: 3)

Other respondents such as solution architect of the platform (C2) or CEO (C3) have similar arguments for use of the hybrid-paperless model as sales director.

4.3 Identified impact

By interviewing our respondents, we have identified a number of impacts or changes that were reported after the adoption. Even though interviewed organizations were not fully integrated due to the complexity of their systems, changes on the organization are already noticeable. According to supply chain supervisor, head of global customs operation and certificate service manager, the impact of the adoption is mainly related to efficiency, which has been increased. Thanks to the increase of the efficiency, organizations were able to lower the amount of workforce and therefore, this can be identified as another impact which affects human resources. Organizations also identified a small impact on their financial resources and their future, which according to supply chain supervisor and head of global customs will possibly lead to the adoption of full paperless within a few years. Finally, supply chain supervisor, certificate service manager and platform architect identified an impact on customer satisfaction which is tightly connected to the possibility of earlier sending of goods.

4.4 Impact of paperless

Each organization experienced several impacts by the adoption and use of the paperless digital platform. All identified impacts are based on the answers from conducted interviews. Thus, following subsections present each of the identified impacts respectively.

4.4.1 Impact on financial resources

According to supply chain supervisor (R1), the impact on financial resources is not expected. Supply chain supervisor sees savings in finances as not the most important part of the whole digitalization (R1: 4). Expected savings are according to supply chain supervisor mainly soft resources, where those savings cannot really be used further for any research or development

nor lower prices of the product (R1: 4). Supply chain supervisor sees the opportunity of digitalization, where they will be able to use robots or automation for various processes that they accomplish daily.

“I also see the completely different area where we can get document or robots to actually manually handle kind of standard operating procedures that we do every day, like typing data to sap based on information we receive from other people.” (R1: 11)

Supply chain supervisor cannot see large financial savings, but rather an improvement of customer satisfaction. As mentioned in the interview, it is a small increase in satisfaction mainly because improvement comes only in 0.1 - 0.125% of all shipments (R1: 15).

By interviewing the head of global customs operation, we have got result savings in the amount of 150.000 Eur (R2: 9). By such value, we can see the bias of the responses reported by global customs operation, where those savings are only considered in a form of 2-3 employees removal per year. However, working capital and other advantages were not considered and thus, such financial saving should not be considered as a result. Even by further interviewing we could not obtain the appropriate result of saved financial resources.

Office manager pointed out that they could see the financial savings immediately after adoption (R5: 6). The office manager said that they felt the impact immediately because it is all done online and working from the first day, but there was no exact number of how big amounts could be saved by this digitalization.

“Yes we do, we could see that immediately. Because when you, implement this digital platform into your organization, because it is all online and from day one.” (R5: 6)

Despite the facts mentioned by organization respondents, creators think that financial gains are significant. According to our interview with sales director of the research platform, financial gains are mainly related to working capital, that for a similar size of the organization as supply chain manager works for (15000 employees) can save more than 6.5 million euros per year (C1: 11). According to the sales director, not every manager is able to spot such savings. After the estimation of sales director, we got estimated savings in comparison to export revenue, organizations can save 1% per year (C1: 13).

“This number has to be verified, but the numbers we have right now it seems that about 1% of sent revenue can be saved in working capital.” (C1: 13)

Sales director explained on the example of large European airport, that airports reported a large loss, which is related to goods that are waiting to be shipped and because of lack of workflow and digitization, can scale to more than 6.7 million euro of yearly loss for companies operating within international trade.

“Platform brings various improvements to the organizations. But over-all its main focused is to optimize export processes: which means better efficiency, fewer costly mistakes, and improvement of cash flow.” (C3: 6)

Solution architect can see advantages in similar areas as sales director, thus lowering costs and quicker sending of goods. According to the CEO of the platform solution, another issue which is solved by the use of the platform is lowering costs of possible errors that happen during a process of filling the documentation (C3: 6).

4.4.2 Impact on human resources

Supply chain supervisor points out that the most important impact of all the identified is impact on human resources. Supply chain supervisor expects to save at least one resource (one employee) while working with certificates (R1: 8). This can be accomplished by the already proven experience of the improved speed of new documents creation and its processing. When questioning what will happen with the employee that will be exchanged for a digital solution, the response was that it might be a change of a workplace to some other position, which can be easily accomplished thanks to the size of the organization (R1: 6). Supply chain supervisor expressed that their organization is currently looking for new staff in various positions, thus the transfer of the employee to a new position should be manageable.

According to the head of global customs operation, by digitizing their workflow, they could remove 3 people from document handling (R2: 11). Head of global customs operation said that their organization is always trying to do the right thing, and if an employee has a competence, then this employee is transferred to a different position (the organization has 19 000 employees). If the employee does not have any competences for a new workplace it is either fired or leaves the company by itself (pension, maternity leave or other). In this case, we can see similarities with supply chain supervisor (R1). In terms of head of global customs operations employees, one of them left the workplace, the other one went for maternity leave and the third one was fired. None of those employees is planned to be replaced.

“In our case, we have one that just left and potentially is not going to be replaced, another one is on maternity leave which we are not going to replace and last one was kind of laid off.” (R2: 11)

According to carnet manager, the amount of their human resources was not changed after the digitalization. Instead, these employees are now able to do and focus on various new tasks.

“We have experienced an impact on the human resource by making it possible for our employees to focus on other and mainly new tasks that are required to be done.” (R4: 7)

The office manager said that they could not lower the number of their human resources, instead of by workflow improvements, employees now do not need to do overtimes and can focus on their current and new tasks. Therefore, the office manager can see savings in a way, where they do not need to hire new employees for the creation of the certificates (R5: 6).

Creators of the digital platform also identified savings in relation to human resources, where they also think that in case of full integration, it is possible to minimize the human resource and use automated robots for all related actions instead. Sales director thinks, that by optimization of processes it is possible to save more than 24 hours, which was also mentioned by supply chain supervisor (C1: 11; R1:14). However, even if the organization is not fully integrated, the solution can still provide savings on human resources in the form of better efficiency when creating various documents. Simplifications and advantages of the digital platform are mainly based on a unified portal, where organizations can handle various documents, fill the details and sign without any need of re-typing data to any other platform. By following this workflow, according to CEO, organizations can not only speed the whole process but also minimize the risk of typing errors.

4.4.3 Impact on business efficiency

According to supply chain supervisor, improvement of efficiency can be measured even though this organization is not fully integrated into the digital platform. Optimization of processes where they do not need to use a number of different platforms but only operate on one of them brings advantage in minimization of workforce and time needed.

“We are seeing in general that we have shorter time spent on creating certificates when we are creating certificates through a digital platform in comparison to the old way where we printed on our own paper, sent it to the food administration and so on.” (R1: 13)

As pointed out by supply chain supervisor, the impact on efficiency is measurable and can reach from 24 hours to 72 hours of savings per shipment (R1: 15). Thus, goods can be sent out much quicker than with previous processes, which minimizes also workforce needed for such tasks. Previous workflow for supply chain supervisor was based on entering data into various platforms which were related to specific documents, taxes and public organizations. Now by using one digital platform, they can not only improve the speed of entering data but also have the possibility to copy the documents, create many more types of document as well as minimize errors that can improve efficiency and quality of their services even more.

Head of global customs operation reported a marginal improvement in efficiency. Even though his organization just started with the adoption, they can already see savings of 10-20% of time spent on one document, which can be translated to 5 - 6 minutes per document. When calculating their amount of shipments (30.000 per year) they can save 2 or 3 employees or more.

Carnet manager that even when they are still in transition (ongoing integration), they could save a huge amount of paper and also reported, that new workflow is much more efficient.

“It is much more efficient. But I am not able to say it in numbers. We see the possibility to focus on other tasks and save time.” (R4: 8)

Based on an interview with the sales director, we can see similarities with supply chain supervisor, where sales director confirms savings of 24 to 72 hours within a workflow that has been previously adopted. Thus, we can surmise that optimization of efficiency by digitalization is marginal and according to solution architect and sales director, such savings of efficiency mean that organizations can within 30 minutes ship their goods from exporting ramps (C1: 13; C2: 7).

4.4.4 Impact on the future of the organization

By interviewing we found out that the future of organizations in relation to digitalization can be considered as a positive. Supply chain supervisor said that even though digitalization of their organization is slowly developing, mainly because of the size of the organization, it is still positive, and they see a bright future of digitalization within their organization. Supply chain supervisor even mentioned that it is not only the supply chain team that got the possibility to use our studied digital platform but also the finance team got some new project that should help them with the automation of various tasks (R1: 11).

Adoption of the digital platform has, according to the head of global customs operations, huge impact on speed and error handling, and saved financial resources have a great impact on the future of the organization. Thanks to financial savings, organization of head of global customs operation can continue in their digitalization and try new ways of improving their services (R2: 16). We have noticed similar opinion also from the certificate service manager, who also sees a number of opportunities and therefore expect the platform to be part of their digital agenda in the future.

“The platform will continue to be part of developing our business, and we will try to help to improve and give our opinions of what can be better in the future.” (R3: 13)

Creators point of view in relation to the impact on the future of the organization is optimistic and full of digital ideas. According to sales director, organizations will be soon able to fully automate most of the processes however, it will take more than 5-7 years to get all the parties to agree on specific standards and allow a digital form of documents. Impact on organizations will be mainly in quicker response and action when the goods are creating. Thus, creators of digital platform want to speed up the whole process of shipping and uncover hidden processes that are currently related to international trade.

“We provide a bridge between digital objects and paper world” (C2: 2)

According to sales director and solution architect, creators want to connect different parties on one platform and give them an option to communicate and exchange documents in a digital way. They also want to provide an option to track and automate various processes (C1: 2, C2: 2).

4.4.5 Impact on customer satisfaction

Based on an interview with supply chain supervisor, digitalization of international trade has a certain impact on customer satisfaction. According to supply chain supervisor, customer satisfaction can be improved by digitalized international trade mainly because of the possibility to send goods to the customer quicker than it was with paper-based processes. Supply chain supervisor sees this impact as a big plus, even though this impact cannot be calculated by any financial advantages. On the other hand, supply chain supervisor points out that their organization has a locked loading date, therefore this impact applies to only a certain amount of shipments which is based on our interview only for five shipments a year.

“We have decided for this solution because we wanted to offer our customers the best possible service” (R2: 3)

Certificate service manager could identify this impact as well, as offering better service to their customers (R2: 3).

The office manager also sees a big advantage in customer satisfaction, because their organization is now able to operate digitally and send goods quicker than with the old workflow (R5: 10).

4.5 Future of paperless trading

Based on supply chain supervisor, there is a slowly developing digitalization within their organization, which is mainly based on the size and number of shareholders that limit the speed of adoption for paperless processes. Supply chain supervisor notices the advantages of paperless and wants to continue in the optimization of their organization to become less dependent on the paper.

Head of global customs operation remarks the future of paperless within the worldwide markets is still quite far away and thinks that it can be accomplished after one or two decades. Head of global customs operation has a different view of European markets where he sees that the adoption of fully paperless solutions can come within 3-5 years on a big scale (R2: 18). Head of global customs operation points out that it is very interesting to monitor current changes in the Middle East, where digitalization is growing rapidly and is getting to the whole world. The vision of the head of global customs operation is to have all processes fully automated and to get rid of possible errors or time-consuming operations. He also says that now is the time when the authorities and banks are waking up and starting to operate more digitally thus, he expects to soon digitalize the letter of credit which was no-go for quite some time.

Office manager hopes that authorities will be able to digitalize as soon as possible, because this is the main part that hinders specific countries and organizations operating in those markets to be competitive internationally (R5: 13).

4.5.1 *Standardization and transparency*

According to the sales director, the future of paperless is based on agreements between various parties such as customs, public sector, various administrations, and organizations. Creators expect that it will take 5-7 years until international trade will be fully paperless worldwide, on the other hand, hybrid-paperless brings most of the advantages even now. As mentioned by the sales director and solution architect, open standards such as PEPPOL or others seem to be the way for a valid and secure way of exchanging documents worldwide. It is the open standard that can overcome the standardization problems and can let anyone read and create documents, with future connection to full automation. Creators see also a possibility of large savings for organizations, which can already save around 1% of their exporting revenue (C1: 13) just by optimization of processes. Then, they increase their savings by minimizing errors and amount of human workforce needed to comply with those processes. PEPPOL, e-delivery is according to sales director, coming very soon and various parties such as Europe, South and North America or Asia already agreed on those standards which should be available until 2023. Sales director and solution architect argue that digitalization will not only help to organizations but also airports, harbours and many other institutions in the optimization of their processes.

5 Discussion

The following chapter will discuss empirical research findings in relation to the available literature. Discussion is split into various topics where each of them is discussed in detail.

Previous research and literature review identified the barriers and opportunities of paperless trade but failed on the identification of the current impact of paperless international trade solutions within the European market. The theoretical framework developed on this research applied in practice has brought a series of empirical data, which constitutes the findings of this study.

5.1 Adoption of hybrid-paperless

The digital platform researched in this study has already interested more than 2000 organizations within Europe, which can raise a question if the adoption of such solution is simple enough. According to Civelek et al. (2015) price to initialize the solution in many cases does not cover the amount of which can be saved by improvements to the workflow. By interviewing creators, we obtained as response that this issue has been overcome by the introduction of “pay per transaction” business model, which let organizations try the solution and minimize the risk of adoption. On the other hand, according to creators, full adoption for bigger organizations can take considerably longer than for smaller, which is by experience around 6 – 9 months. According to the sales director, small organizations can adopt the hybrid-paperless platform within 24 hours. By knowing this, we see that Civelek et al. (2015) saw the major issue in risk that is put on organizations that are trying to digitalize their processes, but in case of our research platform, risk of loss is in a considerable way in the hands of creators of the platform.

Standardization which was mentioned by several authors (Civelek et al., 2015; Laryea, 2005) is also a considerable risk when adopting such solution. According to creators, open standards should lead the present and future of these solutions. Creators also believe that connection of their services to PEPPOL services will further improve the transparency, reliability, and standardization of their platform and by that, increase the number of operating parties.

5.2 Identified impact

Impacts that were identified by our study are definitely in line with the literature which was focused on the Asian market (Civelek et al., 2017; Laryea, 2005; UNNEXT, 2010). Our respondents identified four main impacts that they could already experience. These are; the impact on human resources, business efficiency, financial resources, customer satisfaction and impact on their organization future. Most important and expected impact for our respondents was impact on efficiency in connection to the impact on human resources. By optimization of processes, organizations can remove a few employees and still improve their business efficiency and workflow even further. Based on our interviews, we have identified that organizations could not really identify major financial savings by the adoption of the hybrid-paperless

digital platform, but were more focused on lowering of human resources and improving the speed of document creation process or simplification of access to documents.

5.3 Impact of paperless

As discussed previously, every organization experienced similar impacts, with a small difference in its size. In the following sections, we present each of the impacts in detail and discuss it with literature support.

5.3.1 Impact on financial resources

According to UNNExT (2010) expected results of using Korean uTradeHub solution reach a total of nearly US\$ 3 billion (2.7 billion euro) of savings in total. uTradeHub is currently used by nearly 50 000 different parties such as banks, traders, insurance firms, etc. (UNNExT, 2010).

Based on our respondents, we have not identified noticeable financial savings related to the adoption of hybrid-paperless digital platform in comparison to the size of asked organizations. Identified financial savings were mainly related to the lower number of human resources needed. Supply chain supervisor and head of global customs operation did not consider the improved speed of workflow as something that might save them financial resources (except removal of employees), but rather just simplify and free-up time for other actions of their daily workflow. Supply chain supervisor identified that they can save from 24 to 48 hours in comparison to old non-digital fill out of documents (R1: 14). On the other hand, sales director argues, that the amount of saved financial resources can mainly be noticed in working capital. Sales director points out that the biggest problems that organizations currently have with their workflow are a long time between sending the order and getting paid. But according to sales director of the digital platform, by saving 24 hours from order to shipping, organizations (that are in similar size as interviewed one) can save up to 6.5 million euro per year. CEO, as well as the architect of the platform, confirmed similar results as sales director. We see a major difference in results received in financial resources part, where managers of organizations, who actively took part in the adoption of a digital platform, cannot spot financial savings, whereas literature and creators of digital platform spotted possible large financial savings in working capital. This might be related to the fact that organizations have been using the solution for just a couple of months and are not fully integrated yet.

According to Civelek et al. (2015), cost reduction is also related to fewer errors in the content of documents or less lost documents which was confirmed by our interviews with supply chain supervisor and also by creator sales director or CEO of digital platform. Head of global customs operation confirmed that by using digitalized documents, it is much easier to correct any possible errors, but did not consider this improvement as any financial saving. Supply chain supervisor also confirmed that there is some financial and mainly time-saving by not using, for example, DHL delivery services for sending the documents to specific authorities, but rather communicate and exchange documents with them on the digital platform (Civelek et al., 2015).

Laryea (2005) argues that the high start-up cost of the digital solution can also influence the financial resources of an organization and even make it impossible in certain cases to digitalize. According to the sales director, this specific European platform is trying to minimize this risk by a business model where organizations pay per action. By having such business model organizations can create pilot projects (as mentioned by sales director) and try to digitalize a certain country or just specific type of certificates. We can surmise, that impact on financial resources when starting with digitalization is minimized.

5.3.2 *Impact on human resources*

Human resources and workplaces are highly impacted by digitalization in nearly any industry, however available literature that is discussing digitalization of international trade (Civelek et al., 2015; Laryea, 2005) is not really focusing specifically on such topic. Civelek et al. (2015) discuss the decreased effect of the human factor, which is connected to minimizing favoritism, bribery and other, but there is no further elaboration of how many employees the organization can save with improvements of their workflow by using digital solution. By researching this topic, we have also found out how the organizations plan to use the workforce in case if it is not needed anymore in a specific position. Impact on human resources results in a cost reduction of the overall service provided by organizations. We see that Civelek et al. (2015) relates to it in a certain way as a cost reduction, which in its first stage is trying to eliminate costs that are coming from paperwork. UNNEXT (2010) points out savings of about 234 million euro (US\$ 263 million) for an Asian solution called uTradeHub, that is used in total by over 50 000 different parties. In our case, respondent head of global customs operation says that their savings reach up to 150 000 euro per year, which is based on the possibility to shrink their employee count by amount of 2 – 3 employees (where the original size of the team working with digital platform and certificates is around 40 employees).

5.3.3 *Impact on business efficiency*

Improvements in relation to business efficiency are heavily discussed by most of the authors (Civelek et al., 2017; Djassemi & Sena, 2006; Laryea, 2002) which is also in line with our research, where interviewed organizations identified that business efficiency was improved by digitalization.

Even though organizations of supply chain supervisor and head of global customs operation are not fully integrated yet, perceived benefits in terms of better business efficiency were already spotted. Thanks to improvements in business efficiency supply chain supervisor and head of global customs operation reported a possibility to remove 1 – 3 employees from their teams and the further advantage of no need to hire two more. Reported savings in terms of the time were in the amount of six minutes per one document creations and estimated to 24 – 72 hours within the workflow of order to shipping. Supply chain supervisor pointed out, that such time savings are a big advantage for them because they have finally time to focus even more their work. Sales director sees also the advantage of such time-saving in case if a specific factory closes for holidays and needs to ship their orders after the end of holidays (C1: 12). Results of our study are therefore in line with findings from literature (Civelek et al., 2017).

Author Civelek et al. (2017) pointed out that organizations operating on Korean uTradeHub, started to receive worse results than expected in a later stage of use. Even though this might be true for uTradeHub, we were not able to confirm or disprove this in our research, because the researched platform is quite young and interviewed organizations joined this platform just a couple of months ago. Currently, we can confirm the same results as uTradeHub received in an earlier stage, where transaction cost and productivity has increased.

5.3.4 Impact on the future of the organization

Organizations operating on the digital platform noticed also a great impact of such digitalization on the future of their organization. Interviewed organizations identified a possibility of easier future development and improvement of their digital capabilities.

Head of global customs operation also said that savings created by use of this technology are planned to be used in future digitalization of the organization. Head of global customs operation reported, that their organization plans to invest into similar projects as the researched platform, and possibly digitalize other parts of their business (R2: 16). This confirms the words of (Devereux & Vella, 2018; Legner et al., 2017) who pointed out that, digitalization of products or services can open opportunities for innovation, investments and new jobs.

Supply chain supervisor sees a future of digitalization within their organization as slowly developing because their organization is large and therefore it takes time to integrate, test and confirm every decision. Head of global customs operation has a similar opinion as supply chain supervisor seeing the future as fully digital and automatized and believes that it can happen within a few upcoming years. Head of global customs operation also sees a new opportunity in collaboration with banks and authorities (R2: 18). By words of the head of global customs operation, banks are currently waking up in different countries across Europe (R2: 18). This expectation might confirm that the paperless future is coming in a few upcoming years as Civelek et al. (2017) pointed out. Furthermore, in order to drive paperless processes, it is needed to connect these services with banks and to make expanded use of electronic documents in banking. Therefore, we can confirm that this is also what the organizations can see and are looking for in upcoming years.

5.3.5 Impact on customer satisfaction

By interviewing supply chain supervisor, respondent noticed that by the digitalization of document exchange and further improvement of workflow efficiency, there are no noticeable financial savings, mainly because of setup within a specific organization. Instead, supply chain supervisor pointed out a possible increase in customer satisfaction in the case customers request earlier delivery of goods. Increased customer satisfaction was also further mentioned by the certificate service manager. The knowledge we have acquired from available literature was not considering such an impact as a benefit of adopting the hybrid-paperless solution. In consequence, this important factor that influences organizations when adopting digital document exchange must be mentioned and included in the results. By improvements in customer satisfaction, organizations can gain new opportunities and possibly more trust from their customer which was mentioned in terms of opportunities by Civelek et al. (2017).

5.4 Future of paperless trading

The amount of information and literature about the future of fully digital international trade industry is very limited. As mentioned by Civelek et al. (2017) the elimination of hard-copy documentation and accepting electronic data as the only medium to perform trading operations is considered by stakeholders the ultimate goal as this solution enhances all processes involved. Several initiatives have come one after another with the purpose of achieving a complete paperless customs environment (Civelek et al., 2017). Although a unique ‘single window’ solution that operates worldwide seems to be far away, literature review and results of our study reveal a significant tendency towards this ultimate digital solution. Significant point supporting this fact as De Wulf and Sokol (2005) and interviewed organizations state that a large number of customs authorities worldwide have recently put in place major modernization projects. This is happening not only on a national scale but also under the assistance of international organizations (World Bank, IMF, WTO, WCO, etc.). Future of paperless is related to the better connection of different parties and easier integration which will be cheaper and faster. This optimized integration will allow more parties to join and additionally, to adopt a model of “pay per action” risk that initiates such digitalization. With this practice, the integration will be easier than ever before. By implementing this strategy, organizations can limit the risk of high investments and therefore overcome the barrier discussed by (Civelek et al., 2017; Laryea, 2005). According to our interview, creators are already aware of this issue and are trying to find a solution that simplifies the onboarding of new customers.

Based on our study, we observed that organizations strive to improve their current processes and wish to go towards a digital-paperless future. Organizations plan to invest saved financial resources into digital solutions and minimize costs that are tightly connected with paper-based processes.

5.4.1 *Standardization and transparency*

Standardization and transparency issues which were discussed by Laryea (2005) are also to be overcome, as based on our interview with creators, the industry is currently planning to go towards an open standard called PEPPOL. According to our interviews, the EU must comply with this standard until the year 2023 and, in consequence, we can verify that organizations’ expectations regarding the current state of the international trade market are confirmed.

6 Conclusion

The final chapter discusses the findings of our study. The chapter starts with a discussion of objectives and further, addresses problems and answers research questions as well as a hypothesis.

As explained at the beginning of this thesis, the aim of our study was to identify and explore the impact of the European hybrid-paperless digital platform on large organizations working within international trade. Our research did not end there. We wanted to also research the future possibilities of paperless international trade from both organizations' and the creator's perspectives. To do so, the following research question is presented, and additionally, two sub-questions are also presented to support and motivate further research:

What are the organizational changes and future that paperless technology creates within international trade?

- 1. What are the currently identified impacts of paperless document exchange in the international trade field?*
- 2. What is the future of paperless document exchange within the international trade field?*

Research began with a literature review and gaining an understanding of different topics presented and discussed in the literature. By researching the topic, we have identified the false dichotomy of paperless processes. We found out that, because of the limited use of fully paperless solutions and high reliance on paper in certain procedures, many organizations started to use the hybrid-paperless model instead. Use of hybrid paperless brought similar advantages to organizations as the use of fully paperless processes, without the requirement of total removal of paper-based processes or further limitations.

While researching, we have discovered that hybrid-paperless model was not very well explained in the available literature in terms of graphical presentation, therefore the need for explaining this concept more clearly arises. These findings have been presented in the empirical findings section as well as the answers to the research question. Hybrid-paperless model is represented in our empirical findings in connection to international trade, and more specifically in connection to the actual platform we were researching.

Further research uncovered that available literature about paperless international trade is mainly focused on the Asian solution called uTradeHub that was created in 2008 or solutions that are not related to the international trade, but some other fields that use hybrid-paperless model. Various authors identified different impacts that are related to improved efficiency, gains in terms of financial resources, or fewer errors in documents. Responses from interviewed respondents showed, that they experienced nearly the same impact as the organizations mentioned by the available literature. Identified impacts are impacted on financial resources, human resources, business efficiency, future of organization and customer satisfaction. We have noticed one extra impact that seems to be not yet discovered by the literature which is, increased customer satisfaction. On the other hand, as reported by the respondents, customer satisfaction is increased only in a certain case which happens only a few times a

year or is considered as an improvement of the workflow which increases customer satisfaction.

As conclusion, the table below displays the identified impacts as result of this research. Each of them have been analyzed and discussed thoroughly in previous sections. The identification of these factors has been motivated by literature research and contrasted with the answers of our respondents.

Impact
Financial
Human Resources
Business Efficiency
Future of Organization
Customer Satisfaction

Table 6.1 Identified Impacts

When researching the future of paperless trading, we have noticed a major expectation, not only from respondents of organizations but also from creators. Future seems to be paperless and coming within the upcoming 10 years to more developed countries, at least by expectations from organizations and creators. Researched creators of digital platform and organizations see that the banks and authorities are “waking up” and coming with new possibilities of how to integrate and simplify paperless processes. Less developed countries can, according to our research, expect paperless future in more than 10 years, at least from organizations side, creators believe that the whole world might be paperless within this time. Creators also see the future in bigger transparency and open standards, so that any new organization or authority can read, create and cooperate on one platform.

7 Future research

Hybrid-paperless or paperless international trading has been researched already quite well by various researchers but was mainly focused on the Asian market. Therefore, we see that future research on this topic is important. We have decided to give a certain suggestion for future researchers by our experience with the limitations of our study.

Future research should be focused on European digital solutions, that are longer on the market than 5 years and have more customers than the platform we researched (Asian solution has nearly 50 000 different parties). We think that the best results can be achieved if the platform is already used by banks, insurance companies and airports or harbors for at least a year (preferably two). Only then the future research can be valuable and can decide if European solutions can experience similar impact in later stages as the Asian one. We would also suggest that future research should be quantitative rather than qualitative, in order to gain accuracy on gathered data and involving a greater number of organizations in the research.

Appendix 1 – Invitation paper

Invitation for a research interview

Topic: Paperless document exchange in international trade – difficulties and opportunities in Europe

To whom it may concern,

As part of a research study, students from Lund University would like to invite organizations, operating within paperless international trade, for an anonymous interview.

The interview takes around 30 minutes and is very informal. Researchers are trying to capture difficulties, opportunities and get a better understanding of how organizations use digital document exchange. Furthermore, the study is focused on the impact of digitalized document exchange on financial and human resources as well as user experience.

What is an anonymous interview:

The anonymous interview is focused only on pure data. Researchers are not interested in any other details of the organization nor respondent (such as name, working field, etc.).

Compensation:

There is no compensation for participating in this study. However, your participation will be a valuable addition to our research and findings could lead to a greater public understanding of how digitalization influences organizations within the international trade field.

If you are willing to participate please suggest a suitable day and time.

Best regards,

Ignacio Herrera Cepero

Lubomir Vysin

Appendix 2a – Interview guide organization

Introduction

1. What is your profession within the organization?
2. How many employees does your organization have?

Adoption of digital platform

3. Why have you decided to adopt a digital platform for paperless document exchange?
4. How hard was a process of transition between paper-based and paperless structure?

Expected results and use

5. What were the expected results of having a digital solution for document exchange?

Impact

6. What is the impact of this digitalization on financial resources?
7. What is the impact of this digitalization on human resources?
8. How much time do you spend on one document in comparison to the old way?
9. Do you use paper (after digitalization) in any of your current processes – i.e. sticky notes?
10. Does the solution bring all the expected results already?

Future

11. Where do you plan to invest saved resources?
12. How do you see the future of this digital platform and your organization?

Ending questions

13. Is there anything extra you would like to add?
14. Would you like to change anything in your previous answers?

Appendix 2b – Interview guide creators

Introduction

1. What is your profession within the organization?
2. Can you describe the functionality of your digital platform?

Platform solution

3. Why did you choose a hybrid-paperless model?
4. How many organizations are using the solution?
5. How did you overcome the barriers and what were the most common?
6. What are the advantages that organizations might gain by using your solution?

Future

7. What needs to be fulfilled in order to transfer your solution to fully paperless?
8. How do you see the future of this digital platform and your organization?

Ending questions

9. Is there anything extra you would like to add?
10. Would you like to change anything in your previous answers?

Appendix 3a – Interview transcript 1

#	Question	Answer	Code
1	What is your profession in the organization?	I am a supply chain supervisor for special tasks and projects, such as the digital platform that we have interview about. I have been responsible and lead for the adoption or continued integration of digital platform for our organization.	DIG, ADPT, INT
2	How big is the organization?	Worldwide we have more than 15 000 employees, within the part that is working with the digital platform and export we have 550.	DIG
3	How hard was the transition from paper-based to paperless?	Here is the thing, we have ongoing integration, so it was not completed yet. So, the electronic exchange of our orders and health certificates have been very hard and has not been completed. Not due to the digital platform but we have not been able within the organization due to massive and bureaucratic nature of the whole thing actually been able to implement it yet. So, we didn't have an opportunity to create an EDI or whatever you call it and send it to the creators of the digital platform. We have got clear instruction from creators of a digital platform, what it needs to contain, how to do it but he haven't done so yet.	INT, DIG, IMP, DIGTL
4	What are then your expected results from digitalization?	Our expectation is to save at least one full person. Within the two teams due to amount of different certificates and certificates we have as we are food-producing organization, we have lots of health certificates and all the other stuff of documents to all the different countries. So, the country of origin also. So, one full person in our expectation within this year up and running.	SAV

5	How many people do you have working in this part of the team?	We have approximately 12 shipping assistance and they are related to all of this different type of certificates. Ten to twelve.	
6	What will be the future of this one employee – his place, if you plan to save one do you plan to give this employee a new workplace or fire this person?	It is actually neither, but if I can pick one it would be relocating the resource because it is basically because we are in lack of staff at the moment. So, if we can free-up one resource, we can basically save to, what our optimal ideal workforce would be. Right, so we are actually in a process of hiring people to fill everything, so that is what our expectation is. So that we can do our work properly.	SAV
7	Did you already have any tests? Like how much time you can, for example, save by having the digital solution instead of paper?	We have created one originally with creators of digital platform. We have tried to do a re-do of how much time is actually spent per document per order and how many we have a year. So that's the only thing we have.	DIG, SAV, DIGTL
8	Do you know how much you can save?	Well, it is approximately like one person, where we get all the documentation such as export and so on included. So, in total per order or per document it is pretty difficult, can't remember the exact detail, but you can ask creators for exact documentation related to it.	SAV
9	Do you then plan to use any paper within your office for other processes? Or is most of them covered by the digital solution that you plan to adopt?	Yes, we have actually addressed them a few issues, and for example, ETRs that need to be actually printed and then have it forwarded to our responsible person. A few things looking on giving us as much as we can with it. So, we don't have to do anything related to authorities manually, we want to get rid of the paper within all of the authorized papers and so on. So, we are looking to get everything on the digital platform.	IMP

10	If you will save one work-place than it means that you might save some financial resources, do you have any plan where those resources can be used?	Well, it is called soft resources indeed but, I think we can't lower the prices of the product nor put it into the development. We are not going to, it's not something that our customers are dependent from, however, our shareholders will, because we will be more profitable in a long run, but we have no plans for. There is no free cash available, but it is just, we are going to finally get some people who can take the time to do whatever they need to do with our certificates and documentation.	SAV, CDWN
11	How do you see the whole future of the digitalization?	Slowly developing I would say, hindered by the nature of the largeness of the organization meaning that its harder to get something approved and implemented in a large organization that it is in the smaller organization. Due to shareholders and a lot of people involved in the decision when it is taking more time rather than save it. So I do see situation when we can utilize the electronic transfer of documents to EDI to creators of digital platform which can handle a lots of further communication towards the government, the tax, the customs documents, certificates for food administer services, but also I see completely different area where we can get document or robots to actually manually handle kind of standard operating procedures that we do every day, like typing data to sap based on information we receive from other people. So maybe even automated scan box and stuff like that. So, it is slowly progressing they have got something also within a finance related to automation and beyond that within the supply chain.	IMP, SAV, DIG, AUT,CER
12	How long do you think that it will take to fully integrate	My expectation now is that we are in a safe environment, due to spin-offs and purchase. Honestly, if we can do it within three months it would be great.	AUT

	with creators of digital platform?	But my expectation is more like six months. So right now, we are doing everything manually and in the portals.	
13	So how long does it take you to create a document manually and go through the whole process and what are the problems with the old paper-based process.	We are seeing in general that we have shorter time spent on creating certificates when we are creating certificates through a digital platform in comparison to the old way where we printed on our own paper, sent it to the food administration and so on. Basically we have a large database of customers in there we have, it could be better, but we have an easy way of actually filling out basic information and copy-pasting it from our system and especially when we have customers who need both, the health certificate and certificate of origin and other certificates, we can do it all from the same consignment so we don't have to type the same thing in two different templates. What we would normally have in a standard way we have one pdf format for the health certificate, one format for the certificate of origin which would be just online portal and it would just consume a lot more time just going from one place typing the customer information and then create both certificates. So, we see that a lot of time is saved with the digital platform and it is probably 50% less than what it used to be, in the creation and the benefit is also that we don't need to actually worry about sending it to digital platform receiving it back and it's faster.	SAV, TM, CER, DIG
14	So how long does it take currently in a manual way if you see 50% improvement?	We are saving approximately 24 hours sometimes up to 48hours depending on what time of the day we actually have the certificates created.	SAV
15	Is it possible to estimate what means 24 hours in your organization in terms of financial resources?	Well, the only thing is, well we don't see any dedicated price saving on that part, it Is just more convenient way of working, we don't have to stress in the	SAV, BEN, PR

		<p>same way our deadlines have moved 24 to 48 hours later. When we say we have to create four days prior now we have to do it two to three days prior, so we are just having an easy workflow where we can actually accelerate order in an easy way, that we could not deal without this. So, we are not seeing any price, but we see flexibility increase which can be beneficial for the customer which can't be measured in money, I guess.</p>	
16	<p>So you don't have a possibility to earn from earlier sending of goods or so?</p>	<p>No, basically our organization is locked in a load date based on the order and this is actually locked for more than like five to seven days prior to departure. So, the difference between the documentation, in this case, will not actually matter. We can however in very few situations, if a customer says I need to accelerate this shipment with a health certificate, we would prior say no can't do that because we can't get document back in time, we might be able to cut off one time, one day, and send it one day earlier, but the price would be the same the transportation cost would be the same, the only benefit we would see would be customer satisfaction because he will receive the product one day earlier. That's the only difference. So, no pricing we have put on that, except that maybe five shipments a year out of the five or four thousand we have, we have customers who are a little bit happy, so it is not a something that major. So, in a very small way, it's a better convenience for the customer.</p>	<p>CER, TM, CDWN, BEN, PR</p>
17	<p>Great, so just to finalize our interview, is there anything extra you would like to add to your previous answers?</p>	<p>No, if you are ok with the results then that is fine</p>	

18	Is there anything you would like to change in your previous answers?	No, I am fine thanks.	
19	Okay, thank you very much for being in the study and wish you a nice day.	Thank you, you too, bye.	

Appendix 3b – Interview transcript 2

#	Question	Answer	Code
1	What is your role and profession?	My role is a head of the global custom operation, which handles all of the export within Europe, on the role of adoption the digital solution, I've signed the contract, we made the testing, I am part of the project and heavily involved, I am very much involved also in our IT world to integrate more solutions to the digital solution you are making study about.	INT
2	How big is the organization?	19 000 employees where around 40 works with the platform.	EPYS
3	Why have you decided to integrate a paperless digital platform?	Well, two reasons or maybe three, one is speed, two is the accuracy of the documents if you can reuse our existing data, and three we are spending 30 – 35% of our time just on documents in the department and we are approximately 50 people. We believe that there is quite a huge potential both in the accuracy and also in time.	SPD, TM
4	How hard was a process of transition from paper to paperless structure, any problems or challenges that you experienced?	Maybe it a syndrome but it is always hard to integrate data of our organization to anything or bringing it into the platform, that is at least my experience. That took much longer than we hoped and expected, working with the studied digital platform is also fairly easy but our world is a bit more complex than all the other organizations that are already using this platform.	INT, TM, DIG
5	How long do you think it will take to integrate and put everything in place, and in which stage of the process are you right now?	I think one year, what we have done is that we have integrated our data now, but we are only focusing on standard documents, certificate of origin, and some of the standard health certificate but only for one	INT, STA, CER

		country of Europe. And the rest of the country-specific we plan to integrate after the summer.	
6	What is your experience until now with a paperless structure instead of paper?	We see quite a bit of that in terms of speed and also if something is wrong it is much easier to correct.	SPD
7	What is the expected result?	We expect to save 2-3 FTEs (employees), or you can put it in a different way, we don't want to hire 2 or 3 new ones.	SVG
8	For how long do you use the solution?	You can say the integrated solution we have used for proximately a month; we have been using the frontend a bit longer just to get used to the system and so on. So that is three or four months.	INT
9	Did you see any savings in terms of financial resources?	Not yet, I am sure we will. Of course, reducing the number of employees, not hiring new ones has a value, but also the way we are dealing with sending of the document with DHL reduces as well. You can also say, that we only deal with our goods once they were loaded, so what I can do is the financial benefit I get on when we are working with health certificates is that I can actually present my documents faster, and that should be one or two days faster. It, of course, has a big value depending on how big the credits are. So, savings are close to 150.000 euro per year.	EPYS, RSCS, BEN, FCL, SPD, SVNS
10	Do you know how big saving it in comparison to your financial savings of cargo shipments is?	The idea is that it should be everything, but right now it is quite limited. It is right now 10 – 15 % at the time.	SVNS
11	What is the impact on human resources?	We can save around two to three people right now. Then it always depends on who it is, we can say what we normally try to do is to do it in a proper way, if they have competences we try to use them in another part of the organization, of	PPL, SVNS, EPYS

		course, we are doing that, if not then we will laid them off or in some other cases it is natural leaves like pension or maternity leave which we are not going to replace this kind of things. In our case we have one that just left and potentially is not going to be replaced, another one is on maternity leave which we are not going to replace and last one was kind of laid off.	
12	How much time do you spend on a document in comparison to the previous workflow?	I think right now, as we are still at the beginning, you could say, I think we are saving something like 10-20% per document. And we believe we can save 5 to 6 minutes per shipment per day. We have something like 30 000 shipments per year within the country we have integrated to the platform, so if you put numbers together.	SVNS, TM, INT
13	Do you still use any paper within your office?	Yes, we do. Because in certain countries we send products to they still require paper and proper stamps. That can be also a case for example with letter of credits where it still requires paper.	RSCS
14	How big amount is it in comparison to the original paper process?	I would say it is still 50 – 60%.	RSCS
15	Does the solution bring all of the results that you expected?	It still needs to be synced, but it looks very promising. We want to see it also in other countries where we operate because those are one of the big areas as well, but right now we only have a focus on one.	RSLTS
16	What is the plan with saved financial resources in the future?	We are going to reinvest those resources into platforms as you study currently and take the next steps which we believe will come as well. So further digitalization of organization basically.	DIG, RSCS

17	How do you see the future of the digitalization and removal of paper-based processes?	We have a dream, that everything will be run automatically, and no paper at all. But that might take decade or two before we are there with countries we are dealing with, but we see a very fast change in some of the regions like middle east and that is very interesting to follow. That they are going away from heavy heavy paperwork to actually digitalized documents. So that is very very interesting, and we are very close to that.	FUT, AUT, TM, DIG
18	Can you see any expectation or timespan, how long will it take to go fully paperless?	Fully, in all countries, decades, for what we are doing on a big scale maximum of 3 to 5 years. Then we are there, maximum. It goes really fast, the evolvement, also because the authorities are not waking up in the countries where we are producing (within Europe) and they are supporting the digital processes and now also banks actually will also. So, we can have a discussion which is about the letter of credit which was no-go for quite a while.	FUT, DIG, TM
19	Nice, so just to finalize our study, is there anything you would like to add?	Hm, no I don't think so if you don't have any further questions then no.	
20	Is there anything you would like to change on your previous answers?	No, I think I am fine.	
21	Okay, great, then thank you very much for being in a study and wish you a nice day.	Okay, thank you too bye.	

Appendix 3c – Interview transcript 3

#	Question	Answer	Code
1	What is your role and profession?	I am a certificate service manager so, one of my responsibilities in our organization is for Certificate service. This contains management, improvements or communication and dealing with services as you researched platform.	CER, IMPR
2	How big is your organization?	We are a private organization, funded, owned and managed entirely by approximately 10,000 companies. Our Certificate service serves as Chamber of Commerce.	CER
3	Why have you decided to integrate a paperless digital platform?	We have decided for this solution because we wanted to offer our customers the best possible service and also our organization has a digital agenda. So, I mean we like to create new opportunities and ways of how to work.	DIG, OPP
4	How hard was a process of transition from paper to paperless structure, any problems or challenges that you experienced?	It took dedication and a certain amount of hard work to succeed with the process. Our integration is already done, but we had to go through problems with integration because of the big amount of data and you know, communication here and there and all of the setup. This took most of the time and energy. But it was worth it.	INT, TM
5	What were the expected results of having a digital solution for document exchange?	Our main expectation was to gain a competitive advantage and it has been very well received by the companies that cooperate with us. We are now signing a lot more documents digitally than we had expected. So, this is something that drives our business and overall collaboration with organizations.	ADV

6	What is the impact of this digitalization on financial resources?	Obviously, it saves us from using a lot of forms and printing on paper, and we had the benefit of being first movers on digitally signed export documents in our market. This is a major advantage if we can bring something new to our customers and as first. By that we can gain more customers and as I said before we can see improvement in the form of a higher number of documents that are signed from our organizations.	SVNS, DIG, ADV, IMPR
7	What is the impact of this digitalization on human resources?	It has had relatively little impact on Human Resources once the system was implemented. This means that we could actually save one person, but we do not really see any major improvements there.	IMP, SVNS, IMPR
8	How much time do you spend on one document in comparison to the old way? Any improvements in efficiency?	Yes, we can definitely see improvement in efficiency, and that is why we could also save some small amount of human resources. We save time on the printing and mailing process, so it is an improvement in efficiency. It is mainly great that we do not need to do it as before so this saves us quite some time.	IMPR, EFCY, TM, SVNS
9	Can you describe the process before?	Yes, it is kind of boring but, we had to use I think for or five systems to do the same things and you know training people and doing something in multiple systems and checking it and copying it and doing all the same again or wasting time because of some functionality is not available or so, this was really annoying so, we are really glad that it is now in one solution. Before we could not track what we do that well, and we did not have a number of verifications or how to call it, like checks.	TM,

10	Do you use paper (after digitalization) in any of your current processes – i.e. sticky notes?	Unfortunately, yes. We can not remove the paper just like that from day to day. We still have a need of doing a hard copy of the documents, because we want to archive and it is one of the guidelines of our organizations that we archive this things even if we have a digital solution. Because you know, this is something that you like can rely on but it is better to be safe in many cases.	DIG, SVNS
11	Does the solution bring all the expected results already? (specify the current impact you experience)	We issue more documents digitally than expected, but we have not yet reached the full potential. But I would say it is what we wanted at the beginning and also improve customer satisfaction so that organizations feel better when working with us and we can help them with their work.	DIG, IMPR, CMR
12	Where do you plan to invest saved resources? Like new products, new services ...	We definitely plan to use the saved resources on continuously developing our business. We believe that we can digitalize more and more services and by that be more helpful and near to our clients when they need us. This is also part of our digital agenda for upcoming years, so we are sticking to it and improving what we can.	SVNS, DIG, IMPR
13	How do you see the future of this digital platform and your organization?	The platform will continue to be part of developing our business, and we will try to help to improve and give our opinions of what can be better in the future. From organization perspective as I said we have an agenda, which is focused on the digitalization of various parts of our business, where certificates are one of them because those take a lot of time and energy. We can also see other parts that can be improved.	IMPR, FUT, CER

14	Is there anything you would like to change in your answers?	Hm, no I think I am fine, is there anything else you would like to ask? If so just hit me.	
15	No, I think we have all that we needed, so I would like to thank you for being in the study and wish you a nice day.	Thank you very much, wish you a nice day and accurate results.	

Appendix 3d – Interview transcript 4

#	Question	Answer	Code
1	What is your role and profession?	My role is called Carnet Manager.	
2	How big is your organization?	We are a chamber of commerce which can be translated to a network of trade for the service industry. Our core business is IT/industry & service and we have 250 employees.	RSCS
3	Why have you decided to integrate a paperless digital platform?	We have decided for this solution because we wanted to take responsibility for the digital development and securing the service for our customers. The future will be digital and thus give an environmental benefit.	DIG, INT, DEV, BEN, CMR
4	How hard was a process of transition from paper to paperless structure, any problems or challenges that you experienced?	We are still in transitions since our customers buying Certificates of Origin also relies on their customers reaction and countries willingness to accept digital documents. So we are not fully integrated just ye.	CER, CMR, DIG, INT
5	What were the expected results of having a digital solution for document exchange?	If more and more of our customers adapt digital documents, we will in the future have fewer customers visiting us for legalization of documents. That will give us the possibility for developing other tasks. For our customers the digital solution will save time as well as manpower.	DIG, FUT, CMR, DEV, TM, SVNS, HMN
6	What is the impact of this digitalization on financial resources?	We could save a huge amount on the papers for Certificate of origin as well as papers for other documents. We will for sure benefit, but our supplier of paper will not.	CER

7	What is the impact of this digitalization on human resources?	We have experienced impact on the human resource by making it possible for our employees to focus on other and mainly new tasks that are required to be done.	HMN, RSCS
8	How much time do you spend on one document in comparison to the old way? Any improvements in the efficiency?	It is much more efficient. But I am not able to say it in numbers. We see possibility to focus on other tasks and save time.	EFCY,SVNS, TM
9	Do you use paper (after digitalization) in any of your current processes – i.e. sticky notes?	Not at the moment.	DIG
10	So does this mean you could remove all the paper processing from you office?	Yes, we are doing almost everything on the actual platform.	DIG, FUT
11	Does the solution bring all the expected results already?	Since we are still in transition, we haven't seen many results yet. But from what we see currently, it seems promising.	TRAN
12	Where do you plan to invest saved resources?	We plan to use saved financial resources in both new products and possibly also new services.	SVNS, FCL, RSCS
13	How do you see the future of this digital platform and your organization?	We have already implemented the platform in all our issuing offices and we will adopt the digital solution and work with our customers to convince them that the digital solution is the future.	IMP, DIG, CMR, FUT

Appendix 3e – Interview transcript 5

#	Question	Answer	Code
1	What is your role and profession?	I am the office manager and I am also the responsible person for implementing the digital platform within our group, on group level of our organization.	IMP, DIG
2	How big is your organization and what is your core business?	We are working in a private sector, we are private company, we are cold stores we are a large group of about. I have to count. One, two there, four five. We have about 6 warehouses distributed all over on European country, and we also have ice factories as well. We have 250 employees on a group level, which means in total.	RSCS
3	Why have you decided to adopt a digital platform for paperless document exchange	Well, actually because we always wanted a digital system. We have started developing one ourselves, but it was only an internal online system, where we could help each other in a different cold stores, within our organization. I could develop certificates or documents for my colleagues in other cold stores. But problem with this system was, that it was only internal system and what we really wanted was an external system. Because it actually makes it easier. When you work on the digital platform you have the opportunity to make certificates right when the container or trailer is loaded, you don't have to just make a pre-certificate and then have it filled out with seal afterwards. So you can make what we call, um instant certificate, which can be instantly filled out and sent to the digital platform and have it signed and printed on the same day. The thing is that you save a lots of time with forwarding maile back and fourth	DIG, DEV, CER, TM

		with stationary post, like letter it can take 4-5 days. But with digital platform you can have it all done within 5 minutes. So, we save a lots of time.	
4	How hard was a process of transition from between the paper based and paper-less?	<p>I would say, it is very easy because the matter is that you have the exact same workflow, that you would have normally. But the good thing of being digital is that you can have it within shorter amount of time. You can have your workflow within 15 minutes, whereas before you would put it aside after having the first them. Then leave it for 2 to 3 days after you have the original certificate back and before you can finish your process. Here it can be done within 15 minutes or if there is an urgent case it can be done within 2 hours. The flexibility of the employee having to constantly remember that you have something what you have to finish over there in a pile when the postman arrives with the certificates from the authorities is actually eliminated and you don't have them pre-occupied with everything that they have to remember later on. They can finish the workflow in a shorter amount of time and they can have more correct work. Whereas before you would have people who might forget what was the thing that there had to do. Because it was 2 or 3 days out in future.</p>	DIG, TM, CER, EPYS
5	Did you have any expected results from such a system?	Our wishes for what we would gain from the system, was basically free up our employees because they were overworked with paperwork and also the fact that our service level towards our customers would be improved. We expected to improve the workflow, so that we don't need to print and sign and	EPYS, CMR, DIG

		send documents by post and remember but rather do it all in a digital way. We also didn't want to hire more people for such paperwork and rather see some improvement which will not require us to increase this amount but rather stick to what we have.	
6	Can you see already some financial savings?	<p>Yes we do, we could see that immediately. Because when you, implement this digital platform into your organization, because it is all online and from day one. You actually save this time from day one. You feel the impact immediately. For us as large company with several warehouses it is not something we might be able to see in a particular warehouse online. But when we look in a overall perspective, we actually can see what we before used for developing and updating our own system, we are saving. Where in the local warehouse, we have doubled our price on certificates, but that is only because you pay a fee to digital platform and you pay the normal fee to the authorities and that means that your price in a local cold store goes up like 50%. But in a total scale if you look cross the all cold stores in our group level, the group level saves money because we don't have our system we have to maintain or develop. And we actually put some control system our into digital platform, that we would normally have to create on our own. So there are some workflow processes that were eliminated but overall it is saving money. But I can't put a number on it because it is not numbers that I know.</p>	IMP, DIG, SVNS, TM, DEV, CER, MNY

7	If we can come back to human resource, did you manage to lower amount of human resources?	We have not eliminated any personal because we mainly are in a need to free up some resources because people were overworked. Because of the paperwork which was already there. So, it is only, just freedom and improvement for them to have a normal workday instead of working overtime. And mainly not being so stressed. But it is also, one of the other benefits of it all is, that I can actually see as a manager, that they have quicker fingers because it is better when they are working in an online system. Because you need to follow these workflow processes very straight ahead you can't just change processes as they are, and if you see anything wrong you can fix it immediately. So they become in my book quicker thinkers in this way, and also they, they are much more control minded when they are sitting in their control function. Because they know they have to find this faults, because if the digital platform will send these documents to authorities, and that is their responsibilities, like what we put in front of the digital platform is what is going to be sent to the authorities. So the focus is much more, it is split workflow, where you have one developing and one controlling. The control focus is higher than before. Because they just have to focus on that, then just that one who is actually developing the certificates.	RSCS, IMPR, DIG, DEV, CER, TM
8	Can you compare how long did it take previously and now to create a certificate?	Like I said if we do certificate in one flow, in digital platform. We can actually have a certificate ready within 10 – 20minutes whereas before you would make a pre-certificate which was not fully filled out, you would send it by post which would take 3-4 days back and forth,	CER, DIG, TM

		from the authorities where it would be signed and then you will fill out the missing places in the certificate and then have it finally signed by the veterinarian, by the local veterinarian and then sent it back to customer. So we are talking days maybe even week. I mean if you say 1-2 hours now it would be absolute maximum, before it would be maybe 4 – 6 days. So this is a huge huge difference.	
9	Do you still use any paper in your office or are you fully digitalized maybe thanks to digital platform?	We spoke about having decreased our use of paper of around 50%. But that is not because of the digital platform but also other actions we put online.	DIG
10	What about the expected results, were they fulfilled?	We got what we expected. But also because we have already tested it, I think we were one of the first companies that started to use this digital platform. We don't use the export or sending program of it so much, but we use a little bit of digital platform. We use part of it which is in relation to certificates because we don't have...the products we have in our cold store is customers who book their own transport. But no we got everything we actually thought. We got this resources that are saved, we got the financial side of it in comparison to our financial system to develop and maintain before. We saved time and improved our service towards customers Everything we would expect we got out of it.	DIG, CER, RSCS, FCL, DEV, IMPR, CMR
11	Where do you plan to invest the saved resources?	We won't because we do it in order to free up the resources, because people who were already pretty much overworked. So, for us it was necessity in order to actually maintain the workflow that we have, and customer base we have. But at the same time instead of hiring more	RSCS, CMR, PR

		people who would actually be upping our price somehow, because when you have more people it is more expensive and you have to put your price a bit up. But we wouldn't want and didn't want to do that, because the price on the warehouse level is pretty low. And we wanted to keep it in order to keep being competitive in a international scale.	
12	You have also said that you are saving the money because you don't need to maintain you own solution. Does that make any possibility of further investments?	I am not really able to answer that. Because that is on a group level that our money are being saved and I don't know if they are going to use it on other ERP systems or if it is just something they would like to save. I am not sure about it.	MNY, SVNS
13	Ok I see so next question is, how do you see the future?	I hope, and that is my big hope, that authorities in Europe would actually be willing to as quickly as possible to get online. I mean any fashion just get online to sign and stamp certificates online. Because that would speed up the actual export process hugely and make this country more competitive internationally compared to Netherland or Germany. Where processes are regarding the certificate quicker than in this country.	CER, DIG, SPD
14	Ok nice, my final two questions are, if you would like to add or change anything in you answers?	No, I don't think so. Only if you think that there can be anything what will manage to push the authorities to get online.	
15	No not really but I will ensure that this will be mentioned in our study.	But I really think this is one of the most important things actually. It is about to get them on board with this. Maybe not in a scale in connection to the digital platform but maybe so that they will start signing and stamping digital certificates so forth, because that would speed up everything regarding export. And also, this country more competitive. When it comes to export	DIG, CER, SPD

		and performing document wise that is part of the things that is lacking, and I think that the problem in all of this is that authorities are too slow, when it comes to this. And if they don't start doing something about this, they are going to slow this country in a competitive way internationally and I think this is a big problem for all the exporting companies. They have to start doing something.	
16	Yes, but from our study we can see that banks and authorities are waking up, so it should come within a few years.	I hope so. We have done all we could to push. Haha	
17	Ok than, that were all my questions, thank you very much and have a nice day.	You are welcome and I hope it helps and this will be something they will read.	

Appendix 3f – Interview creator transcript 1

#	Question	Answer	Code
1	What is your profession and role within the organization?	Sales director, the role is, first of all, do planning of our go to market strategy inside the company. By that we of course interview more than 300 or close to 400 different exporting companies in Europe. Defining their needs for the workflow they have and that is basically my role now to present our solution to the exporters, forwarding agents (different handlers of goods).	
2	So, describe what the platform is actually doing, how can it help to the clients?	We have designed the cloud-based software platform solution, which enables even smaller exporter to reduce typing of information by more than five times more or less, by going from one time to five times, meaning that the first step, will always be when they receive a sales order to book a transport, then they have to go to the second portal today to create the standard transport documents, then if it is outside of the European Union, then they have to go to the third portal which is chamber of commerce, to create certificate of origin and then if it is also we are speaking of food and factories then they would have to do health certificates, as well that supports portal. They have to type the same data more or less again and then they also have to do the tax declaration before they are allowed to ship the goods. We are making all of that into one solution, which is available even for the small companies, so when they have booked the transport by the transport company, they even get an overview of the different transport they are using so that they can work in teams and share their information, and they can	TM, SVNS, EFCY, CER, DIG

		just by clicking, add the documents and send them digitally to the different authorities and get approval also digitally.	
3	Who are all the parties joining the platform?	It is exporting companies, forwarding agents, service companies like print services handling special document requirements, it is the end user which we call as a consignor, consignee is importer (buying part) as well and we are aiming or our strategy is to come up and mode and open digital platform to enable digital international global trade. And make it easy for anyone, everywhere.	DIG
4	So, how many organizations are currently using the solution? In a meaning of we had one interview with your customer that said that they are not yet fully integrated, however, they are using the solution kind of like “manually” they are creating the certificates, but it seems like they are not fully integrated?	We have currently more than 2000 companies using our platform, if you take 98% of those, are basically only using it for a certificate of origin, because that is a digital platform, we have provided to a number of chambers. Then we have 10 to 15 clients, who are using entire workflow, going from the booking of the transport to the standard transport document, like CMR, ATR, etc. the certificate of origin, and we have 8-10 clients using the health certificates option, but the number is growing very fast. And that is the challenge basically right now, now we are in contact with the clients, they are in our platform, and now we have to teach and motivate them how to use the rest of our solution.	CER,
5	Why have you decided for a hybrid-paperless model and not fully paperless?	We have to respect that many exporting companies are very different in their maturity of digitalization, and a lot of countries are still asking for a paper version of the document. We believe this will go on for the next 5 – 7 years, and this is why we created hybrid-model to support	DIG, FUT, TM

		both. We are actually very promoting digital standard, the new update of the UBL standard, enabling the receiving part to read this completely digitally as well. And if we succeed in that, we will increase the level of complete digitalization and transactions as well.	
6	Can you describe how the hybrid-paperless model works?	Basically, the clients they have to book the transports and then they get an order they decide for which transporter book their transport, and then they create a document. The transporter will have full access via the digital platform to the documents created and needed for the transport. So basically, only the health certificate still needs to be printed, on a paper scanned, when it is signed and stamped by the authorities, it is scanned and uploaded again to the digital platform. 90% of the export to third-party countries, accept just a scanned copy of the health certificate and don't need a real paper. So, we are getting close to this one.	DIG, CER,
7	Is it the platform or the customer that is doing the printing?	To support this we have printing services, because of the health certificate, they only provide services to stamp and sign in multiple places within Europe. We have actually other partner in Europe, who are doing that, receiving via our platform and they are printing it out, and doing the scanning, and uploading again. That is how we do it, so they send it digitally which is kind of semi-digitized for the exporter.	DIG
8	What were the most common barriers that you had to overcome with digitalization?	As a from start, we actually thought that we will make the easy step and take the small advantage as first, but then I guess after two months in my job I realized if we really have to break through the market, we have to start with the most difficult part –	CER, INT, CMR,

		<p>the health certificates. And focus on where we create most value, when we put basically five portals to one form data entry. We also offer to clients, that if they have large volume data, we can do full integration and automation of data transfer. So, this is basically where we started, after 2 months creating health certificates, finding a solution with that, and worked to get approved by the health administration. We finally received the approval to print on behalf of the exporters, and finally, our software was approved to handle this process.</p>	
9	<p>Did you have more problems with legislation or standardization or explaining to clients how it works, what was the biggest problem? Or was it like one after another and you just went through all of them?</p>	<p>Basically. what we have invented is also a business case, what is a challenge what is behind that, for the exporter. And then we kind of, ok, the challenge is they spend a lot of time first of all and later, so we kind of build a return investment calculation, so we are kind of in the dialog with the client could kind of discuss with them exactly how much time you are spending on this, how many errors you are doing, because are re-typing information three, four, five times and by doing that we got into a better understanding, even the client was kind of educated realizing, their spending and the cost related to this process and this make the first one convinced that there was really a potential here, with a low risk because we also invented the business model where you only pay by transaction. We will integrate you and then you pay additionally fees up-front (that is another one).</p>	<p>TM, CMR, INV, INT</p>
10	<p>What needs to be fulfilled in order to transfer your solution to fully paperless?</p>	<p>We can basically, if the authorities, allow digital version which they now allow with for example certificate of origin the only remaining</p>	<p>DIG, CER, AUT, TM, FUT</p>

		<p>part is the health certificate. Then we can today provide a fully automated solution the only requirement is that the master data by the exporter is completely updated. But then we have robots to create all documents and paper and send them to the authorities automatically. Next step you can say, it is also more interesting if someone can read the digital document. We are delivering them in an open format, but the receiving part, of course, should also be prepared to read this open format as well. And there are still a few years to come.</p>	
11	<p>Do you know what are the biggest savings for your clients in relation to efficiency, human resources or financial resources?</p>	<p>For many of our clients, the biggest saving is a reduction in working capital. Because the time from getting an order to getting it paid, ready for delivery and paid, that is very critical. Because this article is the most expensive, has the highest value, when it is invoiced. For example, one company has a revenue of 468 million euro, they are in process time saving 160 000 – 270 000 euro a year, but the reduction in working capital, just by saving 24 hours from order to shipping and payment is about 6.5 million euro a year.</p>	<p>SVNS, CAP,</p>
12	<p>Because when we had a conversation with you clients, they said that there are more savings in a workforce, that is saving one person with 24 – 48 hours, but they don't see the big advantage of saved financial resources.</p>	<p>It is calculating on the average, because their manager, can see the financial savings on a larger scale because just to give you an example. If you have closed your factory, after the holiday, which they are doing, some of them are closing down. And you open up Monday morning, you can produce goods in a few hours but if they are doing it randomly, they can only send it day after, if they do it with manual processes. If they are using our platform, they can send it within a few hours, on the same day. That is one day of saving from produced to getting paid. And</p>	<p>SVNS, DIG, TM, CAP</p>

		<p>in average if they are, they have calculate themselves that they believe from they receive an order to having it paid they have today about 22 to 23 days but imagine it will take only a few hours to produce the goods, so the rest is going for planning kind of everything and they believe that if they are completely digitized also on the inbound logistics – meaning receiving the goods they need for the manufacturing process and they can prove the planning by the digitalization. So, it is not only us we can help with about 24 hours, but they believe they can get close to 3 times 24 hours so like 3 days. And this is the working capital.</p>	
13	<p>Do you know what are the overall savings of overall in comparison to the shipments? I know it is a hard to question, but maybe you can already see results of how much organizations save in comparison with their shipments.</p>	<p>This number has to be verified, but the numbers we have right now it seems that about 1% of sent revenue can be saved in working capital. Just to give you another example, because of lack of coordination, of timing when you have to pick up the goods as well, when they have to produce the goods they need to get it away from their exporting ramps, dispatch place, immediately so they are working with our terminal solution as well in their mindset, to make sure that it is not left there for more than 30 minutes as a maximum. And it needs to get away because next has to be picked up. And we got a number by one of the largest European airport, just by waiting at the terminals it is more than 6.7 million euro a year in the airport, and that is based on about 100.000 shipments a year. Just in transport time, waiting. Because of a lack of coordination and due to lack of digitization.</p>	<p>CAP, SVNS, DIG</p>
14	<p>How do you see the future of the digital platform and overall your organization?</p>	<p>As we need still to help and promote the open standards, to push it also the secure infrastructure, which is e-delivery model and the PEPPOL</p>	<p>STA, FCL</p>

		<p>model, and yesterday we have a meetings with our partners we will work with them to promote this infrastructure because it is proven, it is secure, and it will help the airports, harbours, public sector as well and financial sector to communicate effectively in a secure way. We are completely compliant with this open standard, as well, and secure standard. And that work has to be carried on because now North America, South America, Asian Pacific, Europe has already signed off for this PEPPOL open standard, e-delivery all the custom organizations in EU have to comply with this standard as well during latest 2023 so that would be our work and then promote our solution.</p>	
15	What is the average time of the integration of the client?	<p>I would say for a larger organization it is 6 to 9 months, because they typically start with a pilot, meaning that they take some specific countries where they have the most obstacles or business pains, and then they create a pilot them, with some of their most eager employees, to for new technology, and test out solution. And when this is tested out and confirmed, they will add more countries, etc. For a small company, they can be up-running within 24 hours. And then again if you have integration, it in my mind takes forever but it takes 6-9 months, but we are working on that to disrupt it and make it within 3 days. Because it is basically a repetitive action that we are doing.</p>	TM, EM-PYS, INT,
16	Perfect, is there anything you would like to change on your previous answers?	No, if you don't have any more questions then I think I am okay	
17	Is there anything you would like to add to your previous questions?	No	

18	Okay, then thank you very much for being in the study and wish you a nice day.	Thank you, you too	
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Appendix 3g – Interview creator transcript 2

#	Question	Answer	Code
1	What is your profession and role within the organization?	I am leading the development team and solution architect. When we get a new client my role is, when there is needed for any changes in the application and also, I assist in the boarding, boarding part.	DEV
2	So, describe what the platform is actually doing, how can it help to the clients?	This digital platform is UBL editor and workflow engine and same time where you can load UBL messages from various formats you can transform to something else you can send it to other you can print it in and manage it. In this way, it's also like storage for document in general. So we provide a bridge between digital objects and paper world. In a good world the place where we are trying to achieve everything is digital but that's not how things are there is a lot of paper involved and the one of the problems we have seen is so the people try to encapsulate themselves inside fence and inside that fence they are digital but when they come outside they even send it as PDF or send it as paper and then retyping happens again. So the paperless and commerce world today is that a lot of things has been digitized but there's no bridge between the fences.	DIG
3	Why did you choose the hybrid-paperless model?	That is because of the reality. If we want to send something for instance to Lebanon it is difficult to expect them to become digital. So, there are some legal boundaries and when we are dealing with international trade all over the world, the paper is still a rule. But I think that should not prevent us from using things digital as long as we can. For instance, even when you are sending the export, when you need to export something,	DIG, LEG, CER, IMPR, PER, SPD

		<p>before people were using our solution, they send it in a piece of paper to get them stamped, he drove back again now the sent in even have typed in or have it loaded from their ERP system to our solution then they can actually send the certificate to the chamber of commerce, they can stamp it and someone else near to our office can print it and sign it. So, there is a lot less driving and a lot less time wasted on this. Even when all the printing is still happening and is something with water-marked paper etc. Then, the digitalization helps in two ways, it helps in proving performance, the speed but also the quality. Because whenever you have retyping there is a risk of error way higher then electronically. So, in this way we both improve speed and quality.</p>	
4	<p>So, how many organizations is currently using the solution?</p>	<p>Hm, we have accounted for 2300. But some of the organization is both P-number and CVR number. So, I think a good guess is, I made a query that could drag out this. I think approximately 1600 distinct organizations. P-number is for sub-organizations because when it comes from some clients, sub-organizations are created the same time as organizations.</p>	RSCS
5	<p>How did you overcome the different barriers and what was the most common one in relation to the whole digital world?</p>	<p>I think the worst case is the processes inside the organizations itself because they are very much used to this paper world and they have to change the mindset of us. Some of them have been waiting long for something new but just they just have a mindset for doing one part different so if I could not just upload it then, they're not thinking the whole process through saying that, Hey! If there's no paper at all then we could do this. And then we also have that integration itself is also</p>	PRCS, INT, STA, DIG

		<p>hard because, it is about semantics, and it is even when things like trade should be standardized it is difficult. We have a case today with package and different level of package like container level, goods item level. And for this guy, that didn't really matter because we are not doing anything about issuing, we just want some data in the system. But nevertheless, they had to take this into consideration and do some reprogramming in their system. And another thing is that when it comes to digital cooperation where system to system speak something like codes needs to fit. You cannot just write a piece if you want to, because that is how you use and interpret and understand it but this needs to be proper code like piece or box or case. Otherwise, there is no understandable communication between the systems.</p>	
6	<p>What do you think needs to be done in order to transfer to fully paperless?</p>	<p>I think the path is shorter then we should think. Because we have a solution. There is an existing network called PEPPOL and with PEPPOL there is a solution in transferring end to end. And it showed with an electronic invoice that it is possible. Because every invoice, and that goes for consignment ends up in the computer. No-one stores it in the paper archive. In this sense, we are dealing with a computer to computer communication. The problem is the line, the wire between. And PEPPOL has solved it, so you can register your capability, what you can exchange, what you can receive and then there are some guidelines and validation tool, etc. So that means that when you register, he can just send it to with mail he has the same value. So that is another thing, the restriction. In Peppol they have the public key infrastructure, everything is coded</p>	FUT

		<p>end to end. You have a lookup. But the hard part is to agree with the guidelines and like forwarding, instruction looks like and which profile is needed etc. And then also changing people's mindset to open the fence and see there is actually world outside. One of the problems is that there have been so many attempts that people might be tired. We heard that from a freight forwarder, that there is no stability, it can't be done, etc. but we think that with Peppol it can be done.</p>	
7	<p>What are the advantages that you can see organizations are gaining?</p>	<p>Transparency. Is the big thing. Imagine if you could know when the plane is arriving with the goods, if you can gain minutes it takes to get your goods from airport to home and you feel save that if you purchase a thing you know that it has not been tempered. All these things have a very big value. And another thing is time to market. Customers leave some of the product 3 or 4 days on the shore. Waiting for it to get shipped and at that time the value of this goods is not paying any interest at all and you can have a container of four million-dollar goods just waiting in four days. It's some cashflow as well and productivity and insurance etc. So, if you can get your things out and you have all the clearance then you have a big advantage. Example of European exporter who exports meat to Japan they ended up in Japan because there was no food certificate associated, but this is the nature of paper. There was no stamp associated and they will not let you out. The agreement is that if there is no stamp, we have no trust. But let's say this has been sent electronically. First of all, you would not be able to send this container if there was not clearance of trust the whole way through and this</p>	<p>TM, EFCY, CER, DIG</p>

		<p>way, nothing has to be returned and we can make sure that everything is set. It is like an airplane if it is on the landing place. If it doesn't have a time slot, to land, it won't set down. And the same thing it can be with the goods you are sending. And I think that with having it electronically you can cross the barriers that customs and other trade restrictors set up for good reasons sometimes, without losing time. But of course, the same thing with an electronic invoice, there was a problem which for instance the offices downstairs who were used to receiving goods and sometimes giving a bottle of wine or something like that. They had some sort of power because they had to say yes / no for everything that was received and turning invoice in electronic, they had nothing to do because everything happened electronically. And they were a bit reluctant for this because they lost something. And I also think that there are some people in a third world who will lose their normal income and that there will be someone against this process. But the advantage for the country and world will be much better.</p>	
8	<p>How do you see the future of paperless and your platform?</p>	<p>I see that there are so many initiatives going on. It is vibrating it is like ice just before it starts to freeze. There is so many small projects but they didn't really find out how to put it all together. But when it does it will go fast. I think in ten years it will be possible for sending and receiving goods fully electronically and the digital signing etc. that will just be default way. And one of the things I think is that cars that will drive itself or drones all that stuff, cannot happen without the electronic exchange of documents. They need</p>	DIG

		to have a snooze and standard of doing it. You cannot send things out and rely on a clerk that is not there. And that is needed and we also see that right now we are in the growth, the crisis is over and companies start escalating their investment and everybody points to digitalization. The problem is just to understand what the digitalization really is, and I think we found it.	
9	So do you think that all countries can be paperless in 10 years?	I think that really the whole world will be paperless, just like a mobile phone is all over the world. You cannot go to any country in a world without a mobile phone. There are no places where there are no mobile phones and I think that the third world will be benefiting the most. They might skip some paper procedures we have been through etc. to jump right to an electronic version. We have seen that in the electronic invoice in South America where because of lack of trust etc. the government sends electronic copies to the tax office. So, they can have control over trade and I also see that they see a big benefit in having thing electronically. It is also easier to sell a system like this because there is just some logic that happens and it is easier to roll out and our system is running from the cloud so it is quite easy to go out to Latvia or Mozambique if they want to be digital	DIG
10	Ok, I think that this is all from my questions, is there anything you want to add or change?	No, but just that things always take longer then you expect but sometimes, it also goes quite smooth. But let me, for instance, say that I was involved in implementing electronic invoices in one European country and I had expected that the private sector had incorporated that and adopted faster. But they just started	TM, SPD

		now, 10 years after the public sector have done it. But we will see.	
11	Ok then thank you very much.	Ok thanks	

Appendix 3h – Interview creator transcript 3

#	Question	Answer	Code
1	What is your profession and role within the organization?	CEO & Co-Founder.	
2	Describe what the platform is actually doing, how can it help to the clients?	The platform allows exporters to digitize the entire export flow, bookings, certificates, documents, etc. It allows service providers to receive and process documents digitally and physically. Instead of using multiple platforms and system to do the same process by which they can save time and financial resources.	DIG, CER, FCL
3	Why did you choose a hybrid-paperless model?	Because the world is moving slowly towards digital/paperless. Currently, we are in the transition period, which I expect to last 10 years. It is necessary to support both physical and "paperless" paper.	DIG, FUT
4	How did you overcome the different barriers and what was the most common one?	We invented the hybrid model (physical and "paperless" paper) because exporters wanted us to handle all their documents or nothing. We introduced the hybrid model and exports started using our platform in a full scale.	RSCS
5	What needs to be fulfilled in order to transfer your solution to fully paperless?	That the world agrees on digital standards, which I think will take a very long time. It is hard to bring all the parties together and create standards that everyone complies with, but I think that it is and must be possible in order to improve the digitalization of the whole industry and world.	DIG, STA
6	What are the advantages that organizations might gain by using your solution?	The platform brings various improvements to the organizations. But overall its main focus is to optimize	IMPR, EFCY,

		export processes: which means better efficiency, fewer costly mistakes, and improvement of cash flow.	
7	How do you see the future of this digital platform and your organization?	We plan to scale and go international. And by that improve the workflow of many other organizations that are still not digitalized but strive to improve their workflow and cash flow.	DIG, FUT

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